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PHYSICIAN TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE, LONDON; AND THE GREAT NORTHERN CENTRAL HOSPITAL.

LECTURE I.[1]

Delivered on Feb. 4th.

MR. PRESIDENT AND FELLOWS—My first duty is to thank the council of this ancient society for the honour that it has conferred on me in appointing me the Lettsomian lecturer for this year, and it will be my endeavour to attain the high standard of excellency which has been maintained by lecturers who have preceded me.

The subject which I have ventured to attack is one of very great difficulty; in fact, I think that the localisation of intracranial tumours is one of the most difficult problems in medicine. The main cause of the difficulty depends on the fact that we have to ascertain the exact position of a tumour, situated within a cavity which is inclosed on every side by an osseous wall, so that it is impossible in the majority of cases to apply the methods of examination which would be applicable to tumours of the abdominal cavity. With the exception of tumours of the outer table of the skull we can gain no knowledge of the position of the tumour by inspection or palpation, and with the exception of aneurysms we cannot learn anything from auscultation, and even with aneurysms we can learn little about the position of the vascular tumour. We have, therefore, to depend almost entirely on the effects of the pressure of the tumour on the brain, effects which show themselves centrally or peripherally. As these effects are chiefly in the nature of pain, paralysis of motion, and loss of sensation, it will be evident that a large proportion of the symptoms produced are subjective—that is, that we have to depend on the word of the patient for the symptoms necessary to make our diagnosis. We have fortunately also some symptoms which can be obtained independently of the patient, such as optic neuritis, paralysis of the ocular muscles producing strabismus, and the condition of the reflexes, whether the organic, deep, or superficial reflexes, but we are not in the position of anyone examining the chest or abdomen where the only subjective symptom is pain and where we are assisted by all the physical signs obtained by inspection, palpation, percussion, and auscultation.

The symptoms of intracranial tumours are best divided into (1) general, and (2) special or localising. There are three symptoms which are very frequently present in intracranial tumours, irrespective of the situation of the tumour; these are headache, vomiting, and optic neuritis. It must not, however, be supposed that these three are present in all cases of cerebral tumour; so far is this not the case that tumours, even large tumours, have existed in which none of these three symptoms were present. *Headache*, if it is always in the same place, is a useful symptom, but what is of more importance is headache with tenderness to pressure. In many cases there is a general headache which the patient cannot localise and though it is useful, when taken in conjunction with vomiting and optic neuritis, to make a diagnosis of an intracranial tumour it does not help us to say in what part of the brain the growth is to be found. Persistent pain always in the same place and with tenderness is in favour of the tumour being superficial and growing from the membranes rather than in the interior of the brain. *Vomiting* to be of diagnostic value must be frequent, every day or two or three times a week and occur irrespective of food. It often attends severe attacks of headache and may be mistaken for migraine. Though it is not of any valuable help in localising the position of tumours it is most frequent in cases below the tentorium.

Optic neuritis, taken in conjunction with headache and vomiting, is one of the most reliable signs of tumour, though it must be remembered that a particular form of optic neuritis, headache, and vomiting are frequent symptoms in Bright's disease. The neuritis may vary from slight blurring of the edges of the disc to intense swelling of seven dioptres with hæmorrhages, and the important fact first pointed out by Dr. Hughlings Jackson must be kept in mind that intense optic neuritis is quite compatible with good vision if optic atrophy has not commenced. Optic neuritis very often begins in one eye or is more intense in one eye before the other, and the question which has much exercised ophthalmic surgeons and neurologists is, Can we tell the side of the brain where the tumour is from the eye which is first, or most, affected? Is the tumour on the same side or on the opposite side to the more intense neuritis? This question will be returned to later.

Before attacking the problem of localising intracranial tumours we must first consider what knowledge we have of the different parts of the brain where these tumours may grow, and especially of the cortex cerebri. Our certain knowledge of the cortex dates from the experiments of Fritsch and Hitzig in 1870 and of Ferrier in 1873, but before these experiments had established the principle of localisation Dr. Hughlings Jackson—a past president of this society—had arrived at the conclusion that the occurrence of unilateral and localised convulsions were due to irritation by tumours of particular convolutions of the opposite hemisphere which were functionally related to muscular movements, and Dr. Hughlings Jackson predicted that certain convolutions would be found excitable. It is now almost impossible to realise that before the time of these observers one part of the cortex was, according to the teaching of Flourens, like any other part; there was no such thing as localisation, and one portion of a convolution had the same function as the rest of the convolution, and there were no different situations either for the different faculties or for the different perceptions. So deeply was this teaching rooted in the minds of physiologists and clinicians that it was only by actually demonstrating the facts that the strong opposition to the doctrine of localisation could be broken down. With the exception of the localisation of Broca's centre for speech we owe all our knowledge of localisation to experiments on animals, and it is quite certain that if it had not been for experiments on animals the surface of the cortex would still be a chaos and the diagnosis of tumours of the brain would be as impossible as it was before localisation was proved to be true.

The power of accurate localisation is of more importance now than it was 25 years ago, when it was of no value, except for the love of the advancement of knowledge, to know whether a tumour was localised in the cortex or in the depths of the interior of the brain. It is now over 20 years ago that, thanks to the antiseptic treatment of Lord Lister, Mr. Godlee removed the first cerebral tumour in London and it is just over 20 years since Sir Victor Horsley removed a tumour from a boy under the care of Dr. Ferrier, since which time numerous tumours have been removed by Sir Victor Horsley and our President at the National Hospital, as well as by other surgeons elsewhere. It is therefore at the present time of the greatest practical importance to make a diagnosis between those tumours which are on or near the surface and can be reached by operation and those which are too deep to be removed. But even in the case of the latter class much relief can often be obtained by removing a large portion of bone and thereby releasing the compressed brain. Before attempting to describe the symptoms by which the seat of tumours in different parts of the brain may be recognised it will be advisable to say a few words about the function of these different parts.

Taking first the cortex cerebri—and under this heading I would also include the subcortical white matter immediately internal to the cortex, which contains the fibres which connect the cortex with the deeper parts—we may divide the cortex cerebri into the excitable area and the inexcitable area. By excitable is meant that if the part be stimulated (under an anæsthetic) by a weak faradic current a movement in the face, limbs, or trunk on the opposite half of the body will be produced, whereas in the inexcitable part no such movement can be elicited. By means of electrical excitation the experiments of Fritsch and Hitzig on the dog and of Ferrier on the monkey showed the parts of the cortex which were excitable and since that time many

[1] Lecture II. and III. will be delivered on Feb. 18th and March 4th respectively.

observers have carried on this work and have added to our knowledge. Some years back Sir Victor Horsley and myself mapped out the cortex of the monkey by examining every one-twelfth of an inch of its excitable area. But it was felt that the macaque monkey was not near enough to man to apply the results there obtained to the brain of man and in 1890, 16 years ago, Sir Victor Horsley and myself worked out the excitable area of the orang-outang, dividing the cortex up into squares of one-twelfth of an inch and stimulating each of them. The results of this experiment on one animal I will now show you. You will see that the region of the cortex from which movements were obtained is almost entirely confined to the ascending frontal convolution. We obtained only a few movements from stimulation of the ascending parietal convolution—viz., movements of the index finger, the thumb, contraction of the opposite upper half of the orbicularis oris, elevation of the opposite upper lip, and the movements of pouting the lips and opening the mouth. From only one experiment it is not possible to make dogmatic assertions as to the inexcitability of the greater part of the ascending parietal convolutions. In 1901 Grünbaum and Sherrington experimented on no less than ten anthropoid apes and their results are most important. They confirmed in almost every particular our observations, but they went further. They found that all the excitable cortex was in front of the fissure of Rolando and that the ascending parietal was inexcitable and they did not find the small amount of excitability which we had elicited. They had, moreover, ascertained the representation of other movements, such as those of the trunk muscles and of the anus and vagina. They further found that whereas removal of parts of the cortex of the ascending frontal was followed by secondary degeneration of the motor pyramidal tract—the fibres which convey the impulses from the motor cortex to the muscles of all parts of the body—removal of parts of the ascending parietal convolution was not followed by any secondary degeneration. Thanks to the kindness of Sir Victor Horsley I show a slide of a human brain where the localisations which have been found by faradic exploration are marked out to compare with the brain of the orang and chimpanzee. With regard to the question of the comparison between the brain of man and that of the chimpanzee I should mention that Dr. Lloyd of America in 1888 stimulated electrically the human brain for the purpose of diagnosis and found motor centres on either side of the fissure of Rolando. He has lately repeated his observations, using the unipolar method, and with greater care he finds that the excitable area exists only in the ascending frontal and not in the ascending parietal convolution.[1]

The recent researches of Dr. A. Campbell[2] on the cells of the cortex, of which I reproduce a diagram, show a different arrangement for the cells of the ascending frontal from those of the ascending parietal and that the two convolutions have probably different functions. There is therefore strong evidence in favour of the theory that in man, whereas the ascending frontal is excitable and motor, the ascending parietal is inexcitable and probably the seat of sensory impressions. The whole of the frontal lobe in front of the ascending frontal convolution was inexcitable in both our experiments and those of Grünbaum and Sherrington except one part, and that was the posterior part of the middle frontal convolution, which is bounded above by the anterior limb of the inferior præcentral sulcus and below by the second frontal sulcus. Excitation of this portion of the frontal lobe gave the movement of both eyes turning together to the opposite side. This division of the cortex into excitable and inexcitable areas we shall find of use when we come to the question of determining the position of cerebral tumours in the cortex.

We see, therefore, that the effect of a very weak electric faradic current applied momentarily is to produce a single movement. What then will be the effect of a stronger current applied for a longer period—say, to the part of the ascending frontal convolution in the monkey where the movements of the thumb are represented? The effect will be a strong tonic flexion of the thumb, followed by strong contraction of the fingers, wrist, and elbow, but as soon as the electrodes are taken off the parts, which were previously contracted tonically, pass into a condition of clonic to-and-fro movements, a series of contractions and relaxations. This is the typical form—tonus followed by clonus—of a fit produced by strong electrical irritation of the excitable cortex cerebri. A tumour, such as an endothelioma, growing from the dura mater compresses the cortex and irritates and produces a cortical or epileptiform fit just in the same way as is produced by a strong faradic current.

The first effect, therefore, of a tumour in the excitable area of the cortex is to produce an epileptiform attack. Practically all our knowledge of these attacks is due to Dr. Hughlings Jackson, for though Bravais in 1827 described these attacks he failed to mention their pathological cause or their etiology. Dr. Hughlings Jackson, in a most wonderful address which he gave before the St. Andrews Medical Graduates' Association and which was printed in Vol. III. of their Transactions in 1870, described a particular class of chronic convulsive seizures, "In which the fit begins by deliberate spasm on one side of the body and in which parts of the body are affected one after another." He also showed that consciousness was often not lost, as it is in idiopathic epilepsy, and that the part which was convulsed was liable to be weak for some days after the attack. Lastly, Dr. Hughlings Jackson made the discovery—and this was the most important point—in a case which he saw in 1868 that the fits which began in the left hand were due to a gross lesion, "a cluster of syphilitic nodules growing from the dura mater and seemingly pressing the pia mater before it into the right cerebral hemisphere."[3] Thus Dr. Hughlings Jackson substantiated that these peculiar fits were produced by a coarse lesion of the cerebral cortex and so predicted the existence of the motor area of the cortex before it was found to be excitable by Fritsch and Hitzig. Hence these epileptiform fits are called Jacksonian epilepsy.

The first effect, then, of a tumour growing from the membranes and pressing on the cortex is to stimulate the cortex in the same way as a strong faradic current does, and the result is an epileptiform attack which begins in that part of the body the movements of which are represented in the region of the cortex which is pressed upon. Taking the ascending frontal convolution, a tumour situated at the inferior part over the so-called face area will produce a fit, the first movement of which will be in the tongue or the corner of the mouth; a tumour in the middle of this convolution near the genu of the fissure of Rolando will produce a fit beginning with tonic spasm of the thumb, while one in the part of the ascending frontal near to the middle line will cause a fit beginning in the hallux or big toe. Although the preservation of consciousness is a distinguishing feature of fits produced by a local coarse lesion, it must be remembered that a fit so produced may begin locally and then become general with loss of consciousness, biting of the tongue, and involuntary micturition, and is then not to be distinguished from an attack of idiopathic epilepsy.

The second effect of a tumour pressing on the excitable cortex is that of permanent paralysis. This is due to destruction of the cortex with consequent loss of power in the part which was formerly the seat of the commencing spasm of the fits. It is important to note that the paralysis is permanent, because after an epileptiform fit, and especially after a series of them, the part which is most affected by the fit, and which is consequently most fatigued, is very liable to be paralysed for a few hours or a day or two after the fit. The fact of the part recovering is against there being actual destruction of the cortex.

The conclusions which I now propose to bring before you are all obtained from my own cases and from cases of my colleagues at the National Hospital, Queen-square, and if I do not refer to other authors it is not because I do not appreciate their work but because the time at my disposal will not allow me to mention the views of all the writers on cerebral tumours. I would here express my sincere thanks to my colleagues at the National Hospital for kindly allowing me to make use of the cases under their care, and I would especially thank Dr. Gordon M. Holmes and Dr. T. Grainger Stewart, the pathologists at the National Hospital, for much assistance.

TUMOURS OF EXCITABLE AREA.

The ascending frontal convolution.—Taking, then, first the tumours of the excitable region of the cortex, and especially the ascending frontal convolution, I propose to give you examples of the symptoms produced by tumours in the different parts of this area. The first case was one of a man, aged 30 years, under my care, from whom a tumour was removed by Sir Victor Horsley from the *lower* end of the *right* ascending frontal convolution and lying in the bifurcation of the fissure of Sylvius into

[1] Journal of the American Medical Association, Dec. 15th, 1906.
[2] The Localisation of Cerebral Function, 1905.
[3] Royal London Ophthalmic Hospital Report, vol. v., part I.

its anterior and posterior limbs. The patient had fits for 11 months, occurring every month, in which there was twitching of the *left* side of the face and left arm. He was unconscious in the first attack, but not as a rule in the subsequent attacks. He had headache and tenderness over the right parietal region, vomiting was not noted, and he had neuritis of the right optic disc and blurring of the left. There was weakness of the left side of the face and the tongue when protruded went to the left; there was some paralytic conjugate deviation of the eyes to the right; weakness of the left arm and leg and increased knee-jerk and ankle clonus were present on the left side. With regard to sensation, there was in the fingers of the left hand some loss to light touches and the sense of position was lost. I will speak more of loss of sensation when I refer to tumours of the ascending parietal convolution. The general symptoms in this case were headache and optic neuritis; and the localising symptoms, which pointed to the lower part of the ascending frontal and the posterior part of the middle frontal convolutions, were the commencement of the fit with twitching of the face, the weakness of the face and tongue, the paralysis of the conjugate movement of the eyes to the left, and the tenderness of the right parietal region. The permanent weakness showed that there was some destruction of the cortex. In another case under the care of Dr. D. Ferrier the tumour was removed by Sir Victor Horsley from the lower end of the ascending frontal convolution (the face area) to the depth of half an inch. Here a man, aged 29 years, had for two years headache and for 15 months fits. He was unconscious in the first fit, but in the next one he felt the *left side of his mouth twitch* and he passed urine involuntarily. The fits occurred three a week, then six a week, and he was unconscious in four attacks only. He had no vomiting and no optic neuritis and the seat of the pain was at first frontal or occipital and later it was most in the *right* temple. In the hospital he had about six fits a week, in the majority of which he was unconscious. In the attack *he lost his voice*, the *left fingers* and the *left side of mouth* twitched, the *tongue* twitched to the left; in another attack in addition the head and eyes turned to the left and the left arm became rigid. He had between the attacks an indistinct speech and weakness of the left face, arm, and leg, with left knee-jerk increased, absent left abdominal and epigastric reflexes, with extensor plantar reflex. He had also slight left hemianæsthesia, affecting the face most, with loss of the sense of position and the loss of being able to recognise by the touch objects placed in the left hand, what has been called astereognosis. Although in this case the general symptoms were slight, the frequent fits—some of them without loss of consciousness—affecting speech, the face, and the fingers with the weakness in these parts, showed a destructive lesion of the lower part of the ascending frontal convolution.

Taking next the *middle* part of the ascending frontal convolution just above the inferior genu of the fissure of Rolando, the so-called arm centre, I will take three cases as examples. The first was that of a man under my care, aged 24 years, who had had nodules growing on the cranial bones for six years. He had frontal headache for two years, failing of sight in the left eye for 18 months, and for the same time he had fits, 19 altogether, in which the eyes felt fixed and then jerked to the right; he felt dizzy and the right arm became powerless but was not convulsed. He then became unconscious. There was no history of vomiting. On admission he had three irregular tumours, endotheliomata, on the outer surface of the left side of the cranium. There was very little weakness in the grasp of the right hand. There was marked double optic neuritis with + 6 dioptres of swelling and hæmorrhages and with some atrophy, the left more than the right. Vision was reduced to one half and the left eye was worse than the right. Tactile, painful, and stereognostic sensations were normal, but there was slight loss of the sense of position in the right hand. After Sir Victor Horsley had removed the diseased bones of the skull in the first stage of the operation a tumour two inches in diameter was removed; it was under the dura mater pressing on the middle of the ascending frontal convolution and projecting one and a half inches into it. After the operation the patient was aphasic and the right arm was powerless, but he gradually recovered and three years later he was still well. The tumours were endotheliomata. The attacks in this case were not of the usual type, for although the eyes twitched to the right the upper limb showed only the primary tonic condition. The twitching of the eyes and the tonic condition of the arm without the face or leg being involved would point to the middle of the ascending frontal convolution as the seat of the tumour. The recovery of the arm between the attacks indicated that though the cortex was severely compressed it was not destroyed; as these tumours do not attack the cortex the paralysis was therefore not permanent.

The second case was that of a young man, aged 20 years, whom I first saw in the out-patient room at the National Hospital. He was admitted under the care of Dr. Ferrier in December, 1885, and he was the first case successfully operated on in London by Sir Victor Horsley, now over 20 years ago. The patient was well up to January, 1884, then cramps occurred in the left thumb and fingers about three a day for three months. In March he had a severe fit, beginning with twitching of the thumb and fingers, then a feeling of heat across the forehead, then twitching up the arm, and he fell down, but did not lose consciousness; he did not bite his tongue or pass urine. The second severe fit occurred in January, 1885, and the third severe fit took place three days later; then he had fits every day for three or four weeks, then none for three months. In August he had another severe fit, then from one to three severe fits a week till admission. After admission in December, 1885, he had from 30 to 40 severe fits, and in all the twitching was in the thumb, fingers, wrist, and elbow, then the face twitched on the left side, and finally he lost consciousness. There was some paralysis of the left arm after the attacks. In February the face on the left side was affected along with the arm. The face was then more affected from eight to ten times a day. There was no sign of paralysis of the face or tongue. With regard to family history it was stated that the patient's father's sister had died from consumption. His present state was as follows. There was no optic neuritis; he could perform all the movements of the wrist and hand fairly well and those of the elbow and shoulder very well; he could perform all the movements of the left thumb and fingers. The deep reflexes were increased in L > R. Sensation was not affected. The plantar reflex was R. > L. In a fit which the man had in the hospital he had the following aura. He felt twitching in the left arm and hand, then he was convulsed for two minutes on the left side only. The head, eyes, and mouth were drawn to the left. He did not lose consciousness, but he was paralysed on the left side after the fit, particularly in the arm, and walked lame; he did not feel a pinch in the arm but could one in the left leg. In another attack the right side followed on the left in convulsions and unconsciousness. Later he had continued weakness in the left hand. The muscular sense was very defective in the left thumb but not in the index or other fingers. At the operation on June 16th, 1886, a two-inch trephine was applied on the right side to the fissure of Rolando, where it is crossed by the temporal ridge, and at the junction of the upper and middle thirds of the circle exposed the edge of a tumour came into view. Further bone was removed and a tumour three-quarters of an inch in diameter was removed from the ascending frontal convolution just below the genu of the fissure of Rolando.

This case was a great triumph for exact localisation which had been achieved through the knowledge obtained by experiments on animals. The place determined on was that for the representation of the thumb in the ascending frontal convolution and on making the first trephine hole the tumour appeared. The man lived till 1891 and he died from tuberculous disease elsewhere. The growth was tuberculous.

The third case of tumour in the middle of the ascending frontal convolution was that of a man, aged 47 years, under the care of Dr. Hughlings Jackson, who for two months before admission had three attacks in which the left arm was convulsed and then the left leg. He had severe frontal headache, attacks of vomiting, and double optic neuritis, with the left eye more involved than the right. There was almost complete paralysis of the left arm, and the left leg was weak; there was no anæsthesia but he located wrongly touches on the left hand and he did not know the position of the hand. Sir Victor Horsley removed a tumour from the part of the right ascending frontal convolution where the movements of the arm are represented, just above the inferior genu of the Rolandic fissure.

In the cases of tumours of the ascending frontal convolution which we have been considering the attacks all begin with a motor spasm, but in the next series of tumours the motor spasm is preceded by a sensory aura of tingling, needles and pins, or pain in the part first affected. I have

already referred to the experiments of Grünbaum and Sherrington and the researches of Campbell and to the probability that the ascending parietal convolution is the part of the brain where sensory impressions are registered. It has long been observed that some epileptiform attacks begin with motor twitching of, let us say, the thumb, and other cases begin with a feeling of needles and pins in the thumb, but owing to the difficulty of correctly referring the symptoms of loss of motion and sensation to the situation of any particular tumour it has been impossible to work out the motor and sensory functions of the convolutions from clinical observations only. It has also been found by Sir Victor Horsley[4] that after removing tumours about the fissure of Rolando patients had slight loss of tactile sensibility, inability to localise touches correctly, and a loss of the sense of position. It is possible that these functions are localised in the ascending parietal convolution. I would also refer to the work of Dr. Charles K. Mills, who has written much on this subject. Of the cases in the ascending frontal convolution cited above, in all of them except one there was only slight change in sensation between the attacks. In four of them there was no definite anæsthesia but the localisation of touches was faulty in two and there was loss of sense of position in the most affected joints in all of them. In one case there was slight hemianæsthesia and hemianalgesia with loss of the sense of position and astereognosis.

The ascending frontal and parietal convolutions.—In the next three cases thd tumours were situated partly in the ascending frontal and partly in the ascending parietal. The first was under my care and the tumour was on the left side at the upper end of these convolutions. The patient was a man, aged 38 years, who had never, so far as he knew, had syphilis. Five months before admission he had a fit with peculiar sensation in the right forefinger which shook, then the feeling went up to the shoulder, down the trunk and from the hip to the toes, then he became unconscious. He had fits then every two weeks, but of a different character; he suddenly felt cramp in the right foot, spreading up the leg and leaving it weak, then up the right side of the trunk and down the right arm to the hand, then into the right side of the head, the great toe began to twitch, and he had a *painful* feeling as though the back of the hand was being cut through and as though it were twitching. He had headache and tenderness one and a half inches to the *left* of the mid-line at the vertex, also optic neuritis of the left disc with +2 dioptres of swelling. There were paralysis of the right ankle and weakness of the right knee, hip, and upper extremity, but the shoulder was weaker than the hand. There was loss of the sense of position in the right toes and ankle. Under mercury and potassium iodide he improved very much and had no fits for 11 weeks, but as they recurred after leaving the hospital he was readmitted a year later. The symptoms were about the same as before; the tenderness of the cranium was most marked just in front of and below the left parietal eminence. There was no vomiting. He had a fit beginning with twitching of the big toe and an indescribable feeling ran up the right leg to the shoulder and down to the hand but not to the face—following the classical course first pointed out by Dr. Hughlings Jackson that when a fit begins in the foot it travels up the leg and down the arm; this was followed by twitching of the right foot and knee and some movement of the shoulder. He was operated on by Sir Victor Horsley who removed a gummatous infiltration for about two inches from the upper end of the ascending frontal and parietal convolutions. After operation the leg and the shoulder were most paralysed and there were some anæsthesia and loss of the sense of position in the leg and arm which recovered first in the hand. In this case the tumour was correctly localised at the upper end of the ascending frontal convolution which is the place found in the cortex of the orang where movements of the big toe are obtained on electrical stimulation, and the curious sensation and pain which the patient experienced would be explained by partial involvement of the upper end of the ascending parietal convolution.

The second case occurring in both ascending frontal and parietal convolutions was that of a man, aged 54 years, under the care of Dr. Hughlings Jackson, who had a tumour one and three-quarter inches in diameter, which extended into the left centrum ovale for nearly two inches under the ascending parietal and reached the surface of the ascending frontal opposite the superior genu of the fissure of Rolando. The patient had for one year severe pains in the right arm and for three months fits with twitching of the right arm and leg and turning of the head to the right. He had also a most peculiar feeling in the fit that the abdominal muscles of the right side were contracting although they were never seen to move. There was also pain on the left side of the head and behind the ear. There was no optic neuritis, but he had paralysis of the right foot and weakness of the hand. Sensation was not affected. It is curious in this case that there was no loss of sensation with such an extensive lesion beneath the ascending parietal convolution, but the severe pain in the arm and the sensation of the abdominal muscles being contracted would be referred to the lesion of the ascending parietal convolution.

The third case was one of my cases from which you, Mr. President, removed a tumour occurring just beneath the cortex of the upper part of the ascending frontal and parietal convolution. The case was published in Volume XVIII. of the Transactions of this society. It was the case of a woman, aged 39 years, who for 12 months before admission had weakness of the right ankle; the loss of power extended up the right leg, and seven months later the right hand was affected, and soon after the whole upper limb became involved. She had pain in the left side of the head but no tenderness, double optic neuritis, and attacks of vomiting. She never had any fits. On admission her mental state was dull and her memory was bad. She had no movement at the shoulder and feeble movements of the rest of the arm. In the lower limb there was no movement of the toes or ankle, and the movements at the knee and hip were obtained with difficulty. Sensation to light touches was impaired on the right arm and leg; localisation was imperfect. The sense of position was lost in the right upper limb and in the right toes and ankle, and there was some loss to painful impressions and those of heat and cold. This case differs from the other cases just mentioned in that the patient had no fits, and this is all the more extraordinary as the growth was only just beneath the cortex and it seemed hardly possible that the cortex could escape being compressed. The localisation of the position of this tumour lay between the corona radiata and the internal capsule, but the fact that along with the paralysis of the leg the shoulder was more paralysed than the hand was in favour of a suboortical lesion rather than that of the internal capsule, as in the cortex the shoulder is represented nearest to the lower limb, whereas in the internal capsule the hand is represented nearest to the lower limb.

TUMOURS OF INEXCITABLE AREA.

The ascending parietal convolution.—Of the cases situated behind the fissure of Rolando which involve the ascending parietal convolution but do not pass backwards across the intraparietal sulcus to the other convolutions of the parietal lobe, I have four instances, one a case of Dr. J. A. Ormerod's, a boy, who had a depressed fracture seven years previously and from whom a traumatic cyst was removed by Sir Victor Horsley from the upper end of the right ascending parietal convolution. He had fits for six months which began with numbness of the left hand, followed by left-sided convulsions with unconsciousness. Three other of these cases were those of tumour in the middle part of this convolution and in one under the care of Sir William Gowers the attacks began with tingling in the fingers or toes of one side, followed by twitching of that side. There was left-sided weakness with complete loss to light touches and loss of sense of position in the right leg and right arm in which there was astereognosis.

In another case, under the care of Dr. Ferrier, of a lesion in the middle of the left ascending parietal, a boy, aged 16 years, had 13 months before admission vomiting and headache with numbness of the right arm; then in another attack speech was lost; then he lost power in the right arm and to a less degree in the right leg and both were anæsthetic to slight touches. All symptoms *except numbness* passed off. He had several fits which began with slight loss of feeling and power in the right fingers, then slight contraction of the fingers; speech failed for a time, but the patient was not unconscious. He had some weakness of the right side and some relative anæsthesia and loss of sense of position with complete anæsthesia of the hand, forearm, and foot. A cyst was removed by operation from the middle of the ascending parietal convolution.

In the third case of tumour of the middle of the ascending

[4] Brit. Med. Jour., 1886, p. 670.

parietal convolution, under the care of Dr. Ormerod, there was no record of any sensory feeling preceding the motor spasm. In the attacks the patient did not become unconscious but for 12 months he had 18 fits, which began with twitching of the right fingers and thumb, going up to the shoulder, with closing of the right hand, and clonic spasm of the right hand and arm. This was followed by twitching of the right foot and leg. Speech was sometimes affected. Localisation was deficient after the fits but at other times there was no affection of sensation. There was left frontal headache and tenderness, and slight optic neuritis.

Therefore, of the four cases in the ascending parietal convolution in three the fits began with a sensory aura and in one with a motor spasm.

The ascending parietal convolution and parietal lobe.—Taking next the cases which are situated in the ascending parietal convolution and involving also the lower half of the parietal lobe there were four examples. The first was that of a man, aged 23 years, with a tumour of the middle of the left ascending parietal, under my care. For five months he had numerous fits, beginning with closing of the right hand, drawing up of the right side of the mouth, closing of the right eyelids, and followed by numbness and pins-and-needles from the hand to the shoulder and then to the face and throat so that he could not speak. He was conscious in most of the attacks. On admission he had pain and tenderness over the left side of his head two and a half inches above the meatus auditorius for an area of two inches. There were no vomiting and no optic neuritis. Speech was thick and there was some difficulty in finding the right word. The sense of smell was lost on both sides. He had a numb feeling in the right hand to the wrist, with impairment of muscular sense, and analgesia of the hand. He had almost complete loss of power of all the right small hand muscles and weakness of the grasp. In the hospital he had a fit with blinking of the eyelids, especially the right, the mouth was drawn to the right, and there were extension of the right index finger and flexion of the other fingers and thumb, and the fit was followed by analgesia of the right hand and forearm. In another attack the motor spasms were preceded by a flushed feeling in the face and the right hand and forearm felt useless and numb. The tumour involved the middle of the ascending parietal convolution and extended back to the marginal and angular gyri of the lower half of the parietal lobe. In this case, although there was the feeling of pins-and-needles and numbness, it sometimes followed, and at other times preceded, the motor twitching.

In a case under the care of Dr. Ormerod, where a cyst was removed from the right ascending parietal convolution and the anterior and middle one-third of the parietal lobe, there were fits for 18 months, beginning with numbness in the left arm, spreading to the face and leg, and followed by clonic spasms of these parts. Also there was often a feeling of numbness without clonic spasms. She also had the general signs of occipital headache, vomiting, and intense double optic neuritis. There was slight weakness of the limbs, but for three months she had permanent numbness of the left side, with left hemianalgesia, and some anæsthesia of the left forearm and hand with diminished sense of position and inability to recognise objects by touch with the left hand (astereognosis).

In the third case under the care of Dr. Ormerod, a man, aged 45 years, had for two and a half years severe headache, and especially in the left frontal and temporal region, where the pain was worse than on the right side, and this is interesting in showing that local pain is sometimes deceptive, as the tumour, a large endothelioma measuring 4 by 3 by 1¼ inches, was removed by Sir Victor Horsley from the ascending parietal convolution and the parietal convolutions behind it. For six months there had been morning vomiting, for four months his vision had failed, and previously to that he had had transient blindness. For nine months he had had attacks of vertigo without losing consciousness. For two years he had fits, beginning with tingling in the great toe, followed by clonic spasm which passed up the leg and down the arm and drew the head and eyes and the mouth to the left, without loss of consciousness, and these he had frequently. On admission his memory was bad. There was some weakness of the left side of the face and especially of the left leg; the left knee-jerk was more active than the right, with left ankle clonus, while the left abdominal and epigastric reflexes were absent. The ocular movements were well performed although there were nystagmoid jerkings of the eyes in all directions. There was marked optic neuritis with extreme swelling and hæmorrhages, rather more on the left than on the right—the side of the tumour. Sensation was, very much affected and there was considerable loss over the left side. Light touches were not felt on distal parts of the limbs and localisation was bad; there was also loss to pain and sensation of heat along with the anæsthesia. The sense of position was considerably lost in the left arm and leg and there was astereognosis (the loss to recognise objects by touch) in the left hand.

In another case under the care of Dr. H. Charlton Bastian a large tumour involved the inferior end of the ascending parietal convolution, the supra-marginal and first temporal convolutions, and anterior to the Sylvian fissure the frontal lobe on the right side. The patient had gradually for three months a tingling feeling in the left forefinger and thumb, with difficulty for fine movements; then trouble in uttering words with weakness of the left side of the face; he had difficulty in swallowing, made mistakes in writing, did not know where he was, and had incontinence of urine. There was no vomiting. At times he had twitching of the left face and hand. He had intense optic neuritis. He had slight weakness of the left face and arm and doubtful left hemianopia. Sensation could not be accurately tested, but it was impaired on the left side.

SENSORY CHANGES IN TUMOURS OF THE PARIETAL REGION.

In the ten cases which I have just brought before you, in all the ascending parietal convolution was involved and the question which is most important is whether sensation is more affected in these cases than in those of tumour of the ascending frontal convolution.

In the two first cases the ascending frontal was also affected, along with the upper end of the ascending parietal, and the attacks were attended with severe pains in the arms but there was no permanent anæsthesia, and in one case there was only loss of the sense of position in the right foot. In four cases where the ascending parietal was alone involved, in two there was hemianæsthesia to light touches and loss of the sense of position and astereognosis.

In two cases where the ascending parietal and the lower half of the parietal lobe were involved there was a feeling of pins-and-needles and numbness in the fits and there was either permanent hemianalgesia or algesia of the affected hand and forearm with impaired tactile sensibility and sense of position and in one case astereognosis. In one sensation could not be ascertained. The question now arises whether the symptoms of disturbance of sensation enable us to more accurately localise the tumour. It is very difficult to dogmatise without more cases, but as far as the observation of these cases goes it tends to show that tumours in the ascending parietal and especially tumours in the inferior part of the parietal lobe are more likely to have fits beginning with a sensory aura and to be followed by more extensive and permanent anæsthesia and analgesia than tumours in the ascending frontal convolution, where the sensory changes are chiefly defective localisation and loss of the sense of position in the part which is first affected by the motor spasm in a fit.

The results obtained in the foregoing cases tend to show that in tumours of the ascending frontal the sensory effect is a faulty localising for light tactile impressions and the loss of the sense of position. In the ascending parietal the sensory effect is a loss of tactile sensation over half the body, affecting mostly the hand and foot, with loss of the sense of position and astereognosis. In the descending parietal and the anterior and middle third of the rest of the parietal lobe, in addition to faulty localisation and loss of the sense of position, of astereognosis, and of tactile sensation, there is analgesia or loss to painful impressions.

There is not sufficient time to discuss the different theories of localisation of sensation, and especially the theory advocated by Dr. Mills[5] of Philadelphia that the cortical representations of cutaneous and muscular sensibility as well as that of stereognosis are independent of motor representation, but I must refer you to his writings as well as to those of Horsley, Knapp, Starr, Dana, Mott, Long, and others. The pressure on surrounding structures by a tumour is so great and such a disturbing factor that it is very difficult to distinguish the direct effect on one convolution from an indirect effect on a neighbouring one and consequently it is almost impossible to draw positive conclusions

[5] Tumours of the Cerebrum, 1906.

from the study of these tumours, about the exact localisation of the different forms of sensation.

It will have been noted in describing the symptoms of the tumours situated posteriorly to the fissure of Rolando that in every case, with the exception of the last but one they have been attended by epileptiform fits, beginning with a sensory aura, but similar in other respects to the fits which attend tumours in the ascending frontal convolution. It may seem strange, if the present idea be correct, that the ascending parietal is inexcitable and is a sensory and not a motor convolution, that tumours in that convolution should produce motor spasms. The probable explanation of this is, that the nervous system being built up on a sensori-motor plan it is possible to excite the motor elements through the sensory side by using a stronger stimulus. Apart from this it is quite possible that the mere mechanical presure of a tumour in the ascending parietal on the ascending frontal convolution would be sufficient to produce a local epileptiform fit.

A Clinical Lecture
ON
PORTAL CIRRHOSIS OF THE LIVER.

Delivered at the London School of Clinical Medicine (Seamen's Hospital, Greenwich, S.E.) in January, 1907,

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GENTLEMEN,—Amongst the diseases which have come in the train of what we are pleased to regard as "civilisation" must be included that on which I address you to-day. This remark will indicate to you that I am confining my lecture and demonstration to that variety of cirrhosis or fibrosis of the liver which is the result of an improper use of alcoholic drinks. It is now known that many poisons may induce changes of cirrhotic nature in the liver, vegetable, mineral, and bacterial, but these are practically unimportant from a clinical point of view, never leading up to what is commonly recognised as grave general cirrhosis. In considering the liability to hepatic cirrhosis we have especially to take note of the fact that the liver presents in different subjects a varying degree of vulnerability and thus it is possible to explain the fact that the disease we are considering is sometimes rapidly induced in some persons and slowly manifested or hardly manifested at all in others who are exposed to the causes leading up to it. Here, as in all maladies, we have to regard the personal factor in the case and the particular proclivity or line of least resistance in each patient. To this point too little attention is commonly paid.

The modern view of cirrhosis of the liver regards its production as the first outcome of some toxic process arising most commonly in the alimentary canal and reaching the liver by the channel of the portal vein. Alcohol, improperly used, was formerly regarded as acting directly upon the hepatic cells and connective tissues of the liver, inducing a fatty degeneration in the former and a sclerogenic change in the latter (fibrosis). Pathologists assert now that alcohol acts only indirectly on the liver by setting up gastro-enteritis in the first instance. This morbid change in the mucosa is believed to give rise to specific poisons which on reaching the liver produce the change in the cells and connective tissues. These two morbid conditions probably react mischievously on each other once they have started and are continually subjected to toxic irritation, alcoholic or other. The dyspepsia of the drunkard is well recognised and remains as long as the evil habits are continued.

Portal cirrhosis is most frequently met with in middle life and few subjects of it surpass 50 years of age. It is to be regarded as a chronic interstitial hepatitis and is now sometimes described as monolobular cirrhosis. Two stages of this process are to be noted—that of the earlier irritation with enlargement of the organ, dyspepsia, morning vomiting, diarrhœa (diarrhœa crapulosa), and loss of muscular strength. Later there may supervene hæmatemesis or epistaxis. The facies of the drunkard is commonly manifest and the breath is foul. The hæmorrhage may be copious, leaving profound anæmia, and melæna may continue for a day or two. This condition is rarely fatal at first and may be recovered from, but in some cases further hæmorrhages occur and prove fatal. This is a rather common event in the case of publicans. The second stage is established when ascites begins. This abdominal dropsy may be preceded by œdema of the feet. It may arise suddenly, especially if dependent on thrombosis of the portal vein. The aspect of the patient in this stage is characteristic. It is obvious that the hepatic condition is, although the main ailment, but a part of a widely spread change in all the textures of the body. Wasting, loss of fat, thickening of the arterial and venous coats, with dilatations of the latter, are manifest. The liver may or may not be readily felt and the spleen is commonly enlarged, though seldom perceptible. There are apt to occur on the arms, neck, and trunk small capillary enlargements termed stigmata, or spider-like angiomata, consisting of a central dilatation with numerous smaller ramifications encircling it. These are practically peculiar to portal monolobular cirrhosis and are most significant of the alcoholic variety. These stigmata sometimes burst and bleed to some extent. A general hæmorrhagic condition is now present and epistaxis and bleeding from the gums may occur. The general progress is downwards. The ascites increases, drowsiness and delirium may come on, and what is known as the "typhoid" state supervenes. Jaundice is not present to any marked extent. Enlarged veins are to be seen over the abdomen inosculating with those of the thorax. A caput Medusæ is sometimes found around the navel due to dilated veins and significant of portal obstruction. The urine is acid, dark, loaded with lithates, and may contain diacetic acid. The urea and chlorides are diminished. Albumin is not often present. The temperature is not raised. The heart's action is feeble and the organ is pressed up into the chest by the ascitic displacement. The blood pressure is low.

The diagnosis of alcoholic cirrhosis of the liver is usually not difficult. There may be, in the case of women especially, no attainable history of intemperance. Their station in life may sometimes lead the unwary to doubt its occurrence, but we have too much knowledge as to the peculiarities of secret drinking amongst women to encourage us in uncertainty in many instances on this point. It is certain that cirrhosis is much less frequently met with in the upper classes of society than in the lower, but is too common even in these days amongst the better placed. Again, cirrhosis of the liver may set in very rapidly in some subjects after a short course of intemperance. In some cases it is not induced till after many years of inordinate use of alcohol. This variation is clearly due to the resistance offered by the liver and other textures which pertains to the personal factor and proclivities proper to each subject. Alcohol is a more toxic agent to some persons than to others. The results of the early stages of cirrhosis may possibly be averted if the habits of the patient can be completely changed. The later stages, when hæmorrhages have occurred and ascites has supervened, afford but small hope of improvement. If the latter conditions are met with for the first time there is little room for doubt as to a diagnosis. Ascites by itself has then to be distinguished from some other morbid states which, by entailing peritoneal dropsy or giving signs of encysted fluid, may simulate portal cirrhosis. Simple obesity may thus be mistaken at first for ascites. Chronic peritonitis may similarly mislead us. Ascites and hæmatemesis almost certainly indicate hepatic cirrhosis. Tuberculous peritonitis with effusion has to be borne in mind. Ascites with jaundice may safely be regarded as dependent on cancer of the liver, and in most cases nodular masses may be detected in its texture. A lardaceous liver may be associated with ascites and general dropsy. Ascites as part of a general dropsy due to cardiac dilatation should present no difficulty in diagnosis, even with a tumid "nutmeg" liver, which is an outcome of the primary disease. Lastly, syphilitic disease of the liver may induce ascites.

In respect of the treatment of the later stages of cirrhosis, when the liver is contracting and ascites progressing, we have to remove the fluid by occasional tapping. The earlier this is done the better, and if there has been hæmatemesis the operation is the more imperative to lessen venous engorgement. Removal gradually by Southey's cannula with carefully applied pressure is the only safe method after emptying the bladder, and the trocar is to be inserted between the umbilicus and the pubes in the mesial line. Remedies such as diuretics are of little avail, if of any, in removing ascitic

fluid. After removal such remedies may prove more efficient. A binder must be worn for some days and all antiseptic precautions are to be employed throughout. The wound should be sealed up with absorbent cotton and collodion.

In recent times an operation has been recommended to prevent further accumulation of fluid. It is known as the Drummond-Morison or Talma's operation and consists in setting up adhesive inflammation between the peritoneal surfaces of the liver and the diaphragm by scraping these surfaces. A piece of the omentum is also inserted between the diaphragm and the surface of the liver to increase the vascular connexion. Another operation sometimes practised is known as epiplopexy, in which the great omentum is stitched to the anterior abdominal wall. Either of these operations should be carried out, if at all, in the early stage of ascites, and only then if the general state of the patient is satisfactory and when treatment by iodide of potassium and one or two tappings have failed to benefit the condition. Very free vascular communication may thus be established between the peritoneum and the abdominal wall. The results of these operations have so far not been very encouraging. About 10 per cent. of the patients only have gained improvement and survived two years.

The best drugs to employ are compound jalap powder and the mercury, squill and digitalis pill, or the resin of copaiba in emulsion or capsules in 10 grain doses may be tried as a diuretic after paracentesis.

It is to be noted that chronic pulmonary tuberculosis is common in drinkers. This is probably to be explained by a generally diminished tissue resistance throughout the body.

AFFECTIONS OF THE LACRYMAL APPARATUS.[1]

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THE lacrymal apparatus comprises two distinct parts—namely, a secretory and an excretory division. The secretory portion is known as the lacrymal gland. It is a small almond-shaped body situated above the conjunctiva of the upper lid in a depression in the orbital plate of the frontal bone called the lacrymal fossa. Several small ducts lead its secretion downwards into the outer half of the superior conjunctival fornix and a cyst-like dilatation of such a duct, an exceedingly rare condition due probably to obstruction, has received the name of "dacryops." A rare congenital condition is fistula of the lacrymal gland, of which a good instance was reported by Angus McGillivray not long ago.[2] A tiny opening lay 1·4 millimetres out from and 1·50 millimetres above the external canthus and tears could now and then be seen to exude from the little orifice, which was surrounded by a few fine hairs.

In structure the lacrymal gland closely resembles the salivary glands. Certain outlying masses of similar material, collectively called the accessory lacrymal gland, are lodged about the conjunctival cul-de-sac above the tarsal plate of the upper eyelid. Some indication of their presence may be got in every eye. On fully everting the upper lid whilst the patient looks downwards a soft lobulated mass covered with mucous membrane will be observed at the extreme outer corner of the fornix. This, the so-called accessory lacrymal gland, has been ablated in cases of obstinate epiphora, especially by French surgeons.

The excretory apparatus includes the puncta lacrymalia, the canaliculi, the sac, and the lacrymo-nasal duct, all of which structures are continuous with one another and so arranged as to carry away tears from the eye. The puncta lacrymalia are two tiny orifices, one superior and the other inferior, lying towards the free border of the eyelids, about six millimetres from the inner angle or canthus. The puncta may be congenitally absent, oftener, in my experience, than is generally supposed, and in some of these cases there is a corresponding want of development in the canaliculus. In another congenital condition the punctum is replaced by a groove, which reminds one of the condition seen after the surgical division of the canaliculus. I have once observed the lower punctum replaced by three tiny apertures—multiple puncta, in fact. Each punctum lies at the centre of a minute elevation, the lacrymal papilla, directed obliquely inwards towards the surface of the eyeball. The canaliculi are the small channels connecting the puncta, on the one hand, with the sac, on the other, and passing behind the caruncle in the substance of the eyelids. It is of practical importance to remember that these tiny tubes take a curved course, lying at first vertically and then horizontally, and that they enter the lacrymal sac either apart or together. The anatomical arrangement of the canaliculi renders it necessary that before a probe can be introduced the lid should be drawn outwards, so as to straighten the curved canaliculus.

The lacrymal sac is a flask-shaped, membranous body lodged at the inner corner of the eye in a groove formed by the nasal process of the superior maxilla and the lacrymal bone. The congenital fistula described by several authors (Spangenberg, Scarpa, Berard, Caron du Villards, Terson, Hardesty, Ridder, Schreiberg, Wood, Hartridge, Agnew, and Caillaud) must not be confused with the commoner condition mentioned by N. B. Harman,[3] where the fœtal fissura facialis is represented by a tiny hole immediately below the inner canthus of the eye. The tendo oculi, or internal palpebral ligament, crosses the lacrymal sac in such a way as to divide that structure into a smaller upper and a larger lower part. It thus forms an important surgical guide, or "landmark," as it is called, to the position of the tear sac, and may be readily felt on one's own person on drawing the eyelids outwards as a tense horizontal cord at the inner canthus. A knife introduced just below the centre of the tendo oculi in such a way as to have its point directed towards the side of the nose would enter the sac. The sac itself is a thinnish bag, measuring when distended six or seven millimetres across and having a length of about 12 millimetres.

The nasal or lacrymo-nasal duct passes in a direction outwards, backwards, and downwards from the sac to the inferior meatus of the nose. Its diameter is four millimetres and its length varies from 12 to 20 millimetres. It is inclosed by the walls of the lacrymal canal, formed by the superior maxilla, lacrymal, and inferior turbinate bone. This arrangement prevents any distension of the duct by retained secretion or the like. The narrowest parts of the passage occur at (1) the point where it joins the sac and (2) at its entrance into the inferior meatus of the nose. It is at those places where pathological obstructions are especially prone to occur. Another factor in obstruction of the nasal duct, now recognised to be of an important character, is to be found in a venous plexus, which lies between the duct and its osseous wall and which is comparable with the venous plexus of the inferior meatus of the nose.

The lacrymal secretion—a salty fluid with few solid constituents—after secretion by the lacrymal gland, is passed by the minute channels already mentioned into the conjunctival sac. The recent investigations of Schirmer[4] tend to prove that when the conjunctiva is normal no more tears are secreted by the lacrymal gland than are sufficient to keep the surface of the conjunctiva and cornea moist. The amount has been estimated at from 0·5 to 0·75 gramme in the 16 working hours of the day. The fluid is forced into the puncta by the act of winking, and this is facilitated by the fact that the fluid cannot easily escape from between the lids, since the edges of the latter are lubricated by the oily secretion of the Meibomian glands. The tears pass downwards through the duct partly by the action of gravity but mainly by the elasticity of the lacrymal sac.

Congenital absence of tears has been reported. In a striking case of the kind described by Sommer[5] in a child aged two and a half years, no weeping followed either the infliction of a severe burn or the subsequent painful dressings after the accident. In an earlier case by A. S. Morton[6] there was an absence of tears as regards the right eye only, due, it was thought, to a congenital absence of the gland on the affected side. Sanguineous lacrymation—"bloody tears"—is another curious condition, instances of which were not unknown to some of the earlier writers, as Forestus (1634)

[1] A contribution founded on a clinical lecture delivered in the Post-graduate Course of Ophthalmology in the University of Oxford, July 17th, 1906.

[2] Ophthalmoscope, 1904, p. 49.

[3] Transactions of the Ophthalmological Society, vol. xxiii., 1903 p. 256.

[4] Graefe's Archiv für Ophthalmologie, Band lvi., 1903, p. 2.

[5] Klinisches Monatsblatt für Augenheilkunde, 1903, Band i., p. 482.

[6] Transactions of the Ophthalmological Society, vol. iv., 1884, p. 350.

and Havers (1716). A recent example is that reported by Richardson Cross.[7] In his patient, a woman, aged 21 years, the bleeding took place periodically from one eye, and when he reported the case it had been going on for 18 months. Some of the cases of so-called "bloody tears" are doubtless but examples of vicarious menstruation, although it must generally remain uncertain how far the blood comes from the lacrymal gland and not from the conjunctiva. In the only case I have myself seen[8] there was reason for thinking that the blood was derived from the last-named structure.

It was formerly taught that the lacrymal gland was rarely involved by disease. The statement is doubtless true as regards neoplasms, tuberculosis, and syphilis, but the contrary is now known to be the case as regards acute inflammation, or dacryoadenitis as it is called. The recent communications of Inman,[9] of A. C. Snell,[10] of Orlandini,[11] of Wicherkiewicz,[12] and of others show that the disease is by no means so rare as has been generally thought. I have myself met with quite a number of cases. The symptoms of acute inflammation of the lacrymal gland reveal themselves by pain, tenderness, and swelling in the upper and outer part of the orbit. The tumified gland may often be felt through the overlying skin, unless the last-named be too œdematous for that to be done. In marked cases the swollen gland may thrust the eyeball forwards, downwards, and inwards, and the chemotic conjunctiva of the superior fornix may project as a flesh-like fold between the lid and the globe. In some cases the stress of the inflammation appears to fall not upon the lacrymal gland itself so much as on its accessory, palpebral, portion. In any event the temperature is somewhat raised and corresponding symptoms of the febrile state are present. The inflammation may terminate in resolution or in suppuration. In the latter event an abscess, which generally "points" externally, will be recognised by the existence of fluctuation. If allowed to open spontaneously, a tear-discharging fistula may persist. Acute dacryoadenitis when bilateral is usually the outcome of general infection, such as may be met with in mumps, gonorrhœa, measles, influenza, or erysipelas. Cases published by Lagrange and by Casali respectively appear to show that amenorrhœa may sometimes give rise to dacryoadenitis. Inflammation limited to one gland, on the contrary, is more likely to be due to a local infection, such as may be induced by blepharitis, styes, or small abscesses about the skin of the eyelids, nostrils, or face. Broadly speaking, the former variety tends to resolution and the latter to suppuration, although there are many exceptions to this generalisation.

Acute inflammation of the lacrymal gland must be distinguished from (1) erysipelas, (2) purulent ophthalmia, and (3) cellulitis of the orbital tissues. Erysipelas may be excluded by the limitation of the redness and swelling to the eyelids, by the absence of vesicles, and by the induration that can usually be felt in the region of the lacrymal gland or of its accessory portion. Purulent ophthalmia agrees with dacryoadenitis in the several facts that it is generally confined to one eye, is associated with redness and swelling of the lids, and is accompanied by a discharge of thick pus. It differs, however, in several respects, such as generalised chemosis and redness of the conjunctiva, tendency to involve the cornea, and the existence of a profuse discharge of pus, which contains gonococci. From cellulitis acute inflammation of the lacrymal gland may be distinguished by the lower temperature and the milder general symptoms, by the absence of marked exophthalmos, and by the localisation of the induration to the outer part of the upper lid.

Dislocation of the lacrymal gland, rare in any event, may be traumatic or non-traumatic. The anatomical position of the gland accounts for the fact that the former is an uncommon accident, and can indeed occur only when the organ is exposed by a wound of the soft parts. In such a case an almond-shaped, fleshy body will be seen to protrude through an incised or a lacerated wound in the neighbourhood of the gland. Spontaneous dislocation of the gland is even rarer. In fact, I know of eight instances only in literature, and I have myself met with the condition once only. Slight fulness—"pouching" as it were—of the outer end of the eyelid, along with the presence of a deeply seated moveable lump, which can be reduced by pressure, constitute the outstanding symptoms of this rare affection.

There is likely to be difficulty in distinguishing a lacrymal gland enlarged by chronic inflammation from one which is the seat of a new growth. Again, neoplasms must be differentiated from so-called pseudo-plasms. The gland may be affected by tuberculosis, syphilis, sarcoma, myxoma, adenoma, and so forth. In such cases there will be a definite swelling, probably obvious on mere inspection in the region of the gland. Sooner or later the eyeball is certain to be displaced and blindness from stretching of the optic nerve may be the result. The organ involved by the growth must be inferred from—(1) the location of the swelling in the known position of the gland; and (2) the hard, rounded edge of the mass. Malignant growths here, as in other parts of the body, are characterised by great pain and rapid growth. The exact nature of the neoplasm, however, may be inferred from (1) the history of the case; (2) the general examination of the patient; and (3) the microscopical examination of a morsel of the growth removed for the purpose.

Lacrymation is practically always due to defects in the drainage apparatus as opposed to the lacrymal gland; it is known as epiphora. The word "lacrymation," on the other hand, is applied to any symptomatic watering of the eye such as occurs in keratitis or other superficial inflammation of the eyeball. Epiphora is the symptom that usually induces a patient to consult a medical man.

In the investigation of a case of epiphora we first inquire in what particular circumstances the watering comes on—whether out of doors or only when using the eyes upon near work. In the latter event, especially when both eyes are affected, it may be in the nature of a reflex from some error in balance of the ocular muscles or from some defect in refraction. The next thing is to look for the lower punctum lacrymale which in health is visible only when the lower lid is very slightly everted by the surgeon's finger. It should lie in close contact with the ocular conjunctiva and dip into the lacus lacrymalis at the inner corner of the eye. The least change in the position of the lower punctum, either inwards or outwards, such as may be brought about by blepharitis, acute or chronic conjunctivitis, ectropion, entropion, senile relaxation of the orbicularis muscle, facial palsy, or eruptions on the skin of the eyelids, will cause a watery eye. Every text-book inculcates the fact that eversion of the punctum will give rise to epiphora, but it does not appear to be widely known that inversion of the tiny orifice will produce the same effect. The upper punctum, perhaps owing to the influence of gravity, is functionally much less important than the lower one, and it may be, and sometimes is, occluded without producing epiphora. An especially troublesome form of epiphora is that which follows the accidental division of the lower canaliculus.

The next step in the investigation is to find out whether the punctum is patent, as in health, or obstructed by an intruding eyelash, a calcareous deposit, a streptothrix concretion, or other foreign body, as in disease. In order to settle this point, it may be necessary to pass into the punctum a fine conical probe. Then we must observe whether there is swelling or other change in the region of the lacrymal sac and if so what are its essential characters and its relation to the tendo oculi. Pressure must be made over the tendo oculi and the puncta meanwhile be watched closely, in order to ascertain whether fluid or air can be squeezed through the little orifice. In that case the surgeon may be sure that some obstruction to the free escape of tears is present.[13] Digital pressure over the sac sometimes causes secretion to escape not through the puncta into the conjunctival sac, but down the duct into the nose, a fact that will, of course, be apparent if a swelling of the sac is thus dispersed without visible escape of fluid from the puncta.

Now, let us suppose that the foregoing steps have yielded a negative result, although the patient complains of epiphora and is clearly suffering from a watery eye. We should then test the permeability of the passages to fluid by

[7] Ibid., vol. xl., 1891, p. 242.
[8] Ibid., vol. xv., 1895, p. 67.
[9] Royal London Ophthalmic Hospital Reports, October, 1903.
[10] Ophthalmology, October, 1904.
[11] Annali di Oftalmologia, xxxiv., 3-4.
[12] Archives d'Ophtalmologie, June, 1905.

[13] Epiphora due to excessive secretion, however, has been described by Berger (Archives d'Ophtalmologie, September, 1903) as an early symptom of exophthalmic goitre. It is, in my experience, not uncommon in these circumstances. Indeed, certain facts make it possible that epiphora from hypersecretion is not so uncommon as is generally thought.

dropping a little fluorescin or argyrol into the conjunctival sac, after the previous application of a drop or two of cocaine (2 per cent.) or adrenalin (1 in 2000). After waiting for some moments we get the patient to blow his nose, when traces of the stain should be found on the handkerchief if the lacrymal passages are in proper working order. A more exact way, perhaps, than that described is to pass the small nozzle of Anel's or other suitable syringe into the lower punctum and to inject tepid saline solution into the passage. If the passage be pervious, as in health, liquid will run from the anterior nares, or if the patient's head be thrown back or if he be lying down during the operation, into the throat. In the contrary event the fluid injected will return through the upper punctum. In reference to this test I may point out that the fact of fluid passing when under pressure does not altogether justify the assumption that it will pass under the normal physiological conditions. Two factors, as already stated, are concerned in the flow of fluid down the nasal duct—first, freedom of the passage-way and, secondly, elasticity of the lacrymal sac. The injection test, after all, can yield information with regard to the first point only.

It is desirable in all cases of epiphora to examine the nostrils with a mirror and nasal speculum, for rhinitis is tolerably common, and cases are known where the nasal duct was closed mechanically by a tumour at its orifice in the inferior meatus of the nose. The condition of the pharynx should also engage the surgeon's attention. The relief of a post-nasal catarrh will not infrequently, in my experience, go a long way towards relieving an annoying epiphora.

The lacrymal sac is subject to acute and to chronic inflammation (dacryocystitis), and it is of practical importance to gain a clear notion of these affections, since they are common in everyday work. Acute dacryocystitis may be defined as a suppurative inflammation involving the sac and the surrounding tissues. It seldom occurs apart from a stricture in the lacrymo-nasal duct, and is essentially due to pyogenic organisms gaining the perisaccular connective tissue through a breach in the continuity of the mucous membrane which lines the lacrymal sac. It will therefore be apparent that the common name given to the condition, "abscess of the lacrymal sac" is not quite correct in point of pathology. "Lacrymal abscess," however, is a perfectly proper designation. In these cases there is generally a history of long-standing epiphora and possibly of other attacks of acute and painful inflammation of the parts often called by the patient "erysipelas." The symptoms are simply those of an abscess in the region of the lacrymal sac. The parts are often exquisitely painful and tender. On inspection there are marked swelling, having its greatest intensity over one lacrymal sac, dusky redness of the skin, and puffiness of the corresponding side of the face. On palpation the swelling and induration are found to lie beneath the tendo oculi and to be hard, unless pus has formed, when fluctuation may sometimes be made out. Pressure over the abscess may or may not cause an escape of pus from the puncta or down the nose. After the lapse of several days the abscess may "point" and the pus escape from an opening just below the tendo oculi. Inflammatory signs then speedily subside but in some cases a minute fistula of the sac may remain. The position of the abscess, the absence of cutaneous vesicles, the unilateral character of the affection, and the history of epiphora should suffice to distinguish acute inflammation of the sac, lacrymal abscess, from erysipelas. Lacrymal abscess must also be differentiated from an alveolar abscess due to suppuration around the root of a tooth pointing in the region of the lacrymal sac.

Chronic dacryocystitis is seldom met with apart from obstruction in the lacrymal passages. The appearance of those who suffer from the ailment is often sufficiently characteristic. Thus, one eye looks bleared and watery and tears may often be seen either lodged in the conjunctival sac or else running down the cheek. The eye is likely to be more or less bloodshot and small crusts are usually present at the roots of the eyelashes, many of which have been lost. To this appearance of one eye the name "lacrymal conjunctivitis" has for long been applied.

The obstacle to drainage may bring about a chronic enlargement of the lacrymal sac—a so-called mucocele, ectasia, or lacrymal tumour—which forms an indolent, non-inflammatory swelling, lying beneath the tendo oculi and more or less obliterating the slight depression that normally exists at the nasal side of the inner canthus of the eye. The upper end of the tumour is rounded and its contents can usually be dispersed by pressure with the finger unless the sac contains granulations, as is likely to be the case in tuberculosis. When we suspect that we are dealing with a chronic blennorrhœa we try the effect of pressure over the lacrymal sac, whether the latter be obviously distended or not. As a rule, some fluid will regurgitate from the puncta. It is of importance to observe whether the fluid is clear, like unboiled white of egg, or opaque, like pus.

Chronic dacryocystitis is commonest in middle-aged females, possibly, it has been suggested, because members of the gentle sex are prone to make more use of their lacrymal apparatus than are men. Syphilis, acquired or inherited, is a predisposing factor. In cases of chronic dacryocystitis neither fluorescein nor saline solution will pass down the nasal duct readily. The exact position of the stricture can be ascertained only by passing a probe, a little operation about which something will be said immediately. Examination of the nose frequently reveals the existence of a chronic hypertrophic rhinitis, and that is probably often the immediate cause of the lacrymal obstruction. Finally, it should be stated that cases of chronic dacryocystitis should always receive careful attention. It is, in fact, a dangerous as well as a tiresome ailment. In elderly subjects the pyogenic organisms (pneumonocci, streptococci, staphylococci, pneumobacilli, bacilli coli, and the ozœna bacilli) always present in the secretion from the sac, are liable to infect any trivial lesion, as an abrasion, of the cornea and in that way to prove the starting point of a serious disease known as ulcus serpens or hypopyon-ulcer, responsible for the loss of many an eye. It is estimated that "in three-fourths of all the cases of hypopyon-keratitis, the corneal infection is primarily caused by an obstruction in the lacrymo-nasal canal" (Haab). They may also infect any cutting operation on the eye, a fact recognised by every ophthalmic surgeon who takes the greatest care to get rid of the condition before he will consent to operate for cataract or, for that matter, for any condition that involves an opening in the tunics of the eyeball.

Finally, it should be stated that epiphora is now and then met with without any obvious cause. Some of these cases may be accounted for by a very slight change in the position of the lower punctum, especially inversion, so insignificant that it may readily escape detection by the surgeon. In other cases chronic rhinitis or pharyngitis is present and such will often yield to irrigation of the nasal chambers with a solution of borax, boric acid, or other non-irritating antiseptic. Byer[14] estimates that in 5 per cent. of the cases obvious nasal conditions are responsible for the epiphora.

It is now becoming recognised among ophthalmic surgeons that the various parts of the lacrymal apparatus are by no means exempt from tuberculosis. Apart from tuberculosis of the lacrymal gland, an instance of which has recently been published by Polignani[15] in a man aged 38 years, tuberculosis of the lacrymal sac, as I have pointed out elsewhere,[16] is far from uncommon in young subjects. The condition often begins as a lacrymal abscess, which when opened remains without much change for months together. In chronic cases the lacrymal sac feels "lumpy," and is apt to present one or more fistulæ with violaceous and everted edges. The condition often co-exists with other signs of tubercle, especially with an indolent enlargement of the pre-auricular and neighbouring glands. The diagnosis is rendered certain by the discovery of tubercle bacilli in scrapings taken from the affected sac.

Before passing to treatment, a word may be said with regard to lacrymal affections in children, which present some peculiarities as compared with those of older subjects. A chronic or acute dacryocystitis, due to a congenital impermeability (epithelial or otherwise) of the nasal duct, with subsequent infection, is by no means rare in newly born babies, as will be evident from the bald statement that among 1538 out-patients seen in the ophthalmic department of a children's hospital with which I am connected no fewer than 27 (1·75 per cent.) were affected. It may be distinguished from unilateral ophthalmia neonatorum, for which I have known it mistaken, by the fact that pressure over the sac generally causes a regurgitation of muco pus from the lower punctum lacrymale. Then there is the further point that sooner or later ophthalmia nearly always affects both eyes, while the other condition is much more likely to

[14] Ophthalmic Record, February, 1904.
[15] Ophthalmoscope, 1905, p. 297.
[16] British Journal of Children's Diseases, 1905.

remain limited to one eye. In older children epiphora is sometimes due to a congenital absence of the puncta lacrymalia, a point that can, of course, be ascertained by an inspection of the parts. Inherited syphilis is common in children suffering from lacrymal abscess.

THE TREATMENT OF LACRYMAL AFFECTIONS.

The treatment of acute inflammation of the lacrymal gland must be conducted on ordinary surgical lines—that is to say, by hot antiseptic fomentations before the actual formation of pus, and by prompt incision, best made through the upper lid, when suppuration has occurred or is imminent. The small incision necessary for this purpose generally affords instant relief to the symptoms, even although pus be not actually evacuated. A local application usually much appreciated by the patient is the old-fashioned lead and opium lotion, applied both before and after suppuration has taken place (liquor plumbi fort., drachms 2; tinctura opii, drachms 4; distilled water to ounces 6; mix and filter).

The management of lacrymal abscess proceeds on much the same lines. There again lead and opium lotion, applied hot or cold according to the sensations of the patient, is often capable of affording considerable relief. An alcohol dressing, too, often does much good. When pus is undoubtedly present an attempt should be made to open the sac by slitting up the lower canaliculus, a small operation much facilitated if the patient be first placed under the influence of gas or of ethyl chloride. Should tumefaction of the parts preclude incision through the canaliculus, the abscess must be evacuated by means of an incision through the skin over the lacrymal sac. In this connexion it is well to bear in mind that a narrow blade held so that its point lies directly beneath the centre of the tendo oculi, while its handle lies midway between the external angular process and the tip of the nose, is directly over the lacrymal sac. By simply raising the handle of the instrument while the point is kept steady the blade will enter the lacrymal sac. The cavity remaining after evacuation of the pus should be stuffed with iodoform gauze, in order that it may heal by granulation from the bottom and thereby avoid the formation of a lacrymal fistula. It need scarcely be added that no attempt should be made to pass a probe until acute inflammatory symptoms have subsided.

The treatment of chronic dacryocystitis opens up large questions, the adequate discussion of which would be impossible in the space at my disposal. One thing is nevertheless certain—namely, that since the introduction of such penetrative antiseptic agents as protargol, argyrol, and sophol surgeons are becoming less and less inclined to adopt heroic measures in the treatment of epiphora. In fact, speaking for myself, that is the treatment which I invariably adopt to begin with in such cases, and it is surprising how often it succeeds. Systematic injection of the lacrymal passages with weak antiseptic lotions, such as mercury bicyanide (1 in 4000), will do much good or even cure when epiphora is not of long standing and is not the outcome of organic obstruction. In this connexion it should be stated that the injection of protargol or of argyrol into the lacrymal passages is not wholly devoid of danger, especially if an accidental breach be made with the nozzle of the syringe in the mucous lining of the sac. The fluid may then pass into the surrounding tissues and produce decolourisation of the eyelids, as mentioned by Hinshelwood,[17] or even lead, as in a case alluded to by Brewerton,[18] to cellulitis and loss of the eye.

Powerful adjuvants in many cases are furnished by douches of the nasal cavity—e.g., with Dobell's solution—and by cauterisation of hypertrophic mucous membrane. It need scarcely be said that tuberculous, and especially syphilitic, processes must be treated by general remedies.

Should the simple methods mentioned above fail to relieve the epiphora most surgeons divide the canaliculus and introduce probes of gradually increasing calibre. In this country the lower canaliculus is the one nearly always selected for division. It must not be forgotten, however, that there is something to be said in favour of operating upon the upper canaliculus. Arlt[19] prefers to treat the latter for two reasons: first, because probes can be introduced with greater ease; and, secondly, because loss of function in the canaliculus, which is apt to follow treatment, is less troublesome in the upper than in the lower canaliculus. An excellent plan to prevent adhesion between the cut surfaces of the canaliculus, recommended by Haynes Walton many years ago, is to remove with forceps and scissors a wedge-shaped piece of the mucous membrane from the posterior lip of the cut canal. This procedure has been reintroduced lately by von Hoffmann, in evident ignorance of the fact that it has been known to, and practised by, English surgeons for many years.[20] In the interval between the introduction of probes the parts are kept clean by the use of some antiseptic lotion, of which a saturated solution of boric acid is to-day the favourite with most surgeons.

Realising that conservative treatment by probes is likely to be as painful to the patient as it is disappointing to the operator many surgeons, especially upon the continent, have practised extirpation of the lacrymal sac. In my experience, this radical operation is by no means always easy to perform, although the results are usually excellent. I shall not in this place describe how the sac is removed but shall merely say that the following are the circumstances in which the operation is to be recommended: (1) when ordinary methods have failed or cannot be applied owing to the particular circumstances of the case; (2) when there is a definite and pronounced distension of the sac or when fistulæ are present; (3) when tuberculosis of the sac exists; (4) when a cutting operation on the eyeball, as cataract extraction, is imminent; and (5) when a septic ulcer of the cornea coincides with a diseased condition of the lacrymal sac. It might be expected that epiphora would continue after excision of the sac but, as a matter of fact, the removal of a source of reflex irritation appears to reduce the secretion from the lacrymal gland to a minimum.

Other operations proposed and carried out for the relief of epiphora include removal of the lacrymal gland or of its accessory portion alone. It will suffice if I merely mention the much more complicated operations described by Aubaret and by Toti respectively. Both the operations named essentially depend on the making of a free opening between the lacrymal fossa and the middle meatus of the nose. They differ, however, in the fact that while Aubaret[21] removes the sac and then provides free drainage into the nose, Toti[22] provides an artificial channel for the tears by establishing a communication between the sac and the meatus.

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[17] Ophthalmoscope, January, 1906.
[18] Ibid., April, 1906.
[19] Graefe-Saemisch Handbuch.
[20] Recueil des Travaux du Xe. Congrès International d'Ophtalmologie, 1904.
[21] Annales d'Oculistique, August, 1904.
[22] Clinica Moderna, 1904, No. 33.

A CASE OF SARCOMA OF THE SCAPULA IN A CHILD AGED FOUR YEARS,

WITH NOTES ON SARCOMA OF THE BONES OF YOUNG CHILDREN IN GENERAL.

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SARCOMATA of bone in young children are of such infrequent occurrence that it is desirable to publish details of a case recently under my care.

The patient, aged four years, was admitted into St. Bartholomew's Hospital on Sept. 26th, 1906. Seven weeks previously the mother had noticed a small swelling over the posterior aspect of the right shoulder. The swelling progressively increased in size, though at no period during the course of the disease did the child apparently experience any pain. On examination a firm globular swelling was found to occupy the infraspinous region of the right scapula, obviously involving the infraspinatus muscle and intimately attached to the underlying bone. At the centre of the tumour a prominence was felt, about the size and shape of a marble, as if the growth had penetrated the dense fascia which overlies the infraspinatus muscle. The superjacent skin, though showing some dilated venules, was not adherent to the tumour. All movements at the shoulder-joint were practically unimpaired, and the scapula moved freely as a whole over the chest wall. Some suspicion was entertained that all was not well with the supraspinous region, but the subscapular surface and the axilla were entirely free from growth. The general condition of the child was not very favourable,

and it was open to question whether any very extensive operative measures were to be advocated. Amputation of the fore-quarter was certainly out of the question and I decided, after consultation, to excise the scapula only. This operation was to have been carried out six days later but during this brief period the growth spread at a terrific rate, bursting, so to speak, its earlier confines and involving rapidly, one after the other, the muscles attached to the axillary border of the bone, the posterior axillary fold, and the axilla itself. The movements at the shoulder-joint now became much impaired, not from actual involvement of the joint cavity but as a result of the extensive infiltration of the surrounding muscles. Simultaneously, the child developed a cough and an examination of the lungs revealed an area of dulness over the posterior aspect of the right lung, between the vertebræ and the vertebral border of the scapula. The child furthermore looked so ill that all idea of operative treatment was reluctantly abandoned. The child was discharged on Dec. 14th. The tumour rapidly increased in size and extent during the latter half of the month and the child was admitted early in January into a home for the dying.

As far as I have been able to find out, literature does not record a case of primary sarcoma of the body of the scapula in a child so young. The scapula was involved in three cases in the accompanying table, Cases 2, 6, and 12. In Case 6 the tumour was of congenital origin but arose from the outer extremity of the acromion process; in Case 2 the growth was in relation to the same process and formed part of a "multiple sarcomatous invasion"; whilst Case 12 was that of a child, nine years of age, in whom the body of the scapula was involved and which closely resembled the case here recorded. When details with regard to the removal of the tumour were under discussion the question arose as to the probable risk to life in a fore-quarter amputation. The youngest case that I know of in which this treatment was carried out for primary sarcoma of the scapula is one reported by Cabot.[1] The child was 12 years of age and suffered from a growth which extended upwards to the

TABLE OF 23 CASES OF SARCOMA OF BONE IN YOUNG CHILDREN.

Case	Age.	History, situation, and nature of tumour.	Operation, if any. Result. Necropsy, if any.	By whom and where published.
1	3 months.	Round-celled sarcoma of the upper jaw.	Two operations. The patient died after the second.	Douglas Drew: Reports of the Society for the Study of Disease in Children.
2	3½ years.	Round-celled alveolar sarcoma of the femur, the left scapula, the cervical and axillary glands, and the glands of the groin.	Inoperable.	F. Packard: Pediatrics, vol. viii., 1899.
3	2½ ,,	Spindle-celled sarcoma of the femur and the vault of the skull. Rapid growth.	Inoperable. The iliac and inguinal glands also affected.	A. H. Tubby: Reports of the Society for the Study of Disease in Children, vol. i., 1904.
4	18 months.	Endothelioma (?) of the temporal bone (? arising from the dura mater and not from bone) First noticed when the patient was three months old.	Removal unsuccessful. Became smaller during 11 months' treatment with "mixed toxins of erysipelas." Ultimate result not stated.	Dr. Abbé: Pediatrics, vol. i., 1896.
5	3 years.	Sarcoma of the base of the skull. Three months' history of proptosis. Rapid growth.	Inoperable. The patient died after being three weeks in hospital. Metastases in the lungs, &c.	Jahrbuch für Kinderheilkunde, vol. viii., p. 374.
6	Congenital	Mixed small spindle- and round-celled sarcoma of the left scapula, arising from the outer part of the acromion process. Rapid increase up to five months.	Local removal. The patient was quite well some years later.	Henry Curtis: Pediatrics, vol. vii.
7	1 year.	Very vascular round-celled sarcoma of the base of the skull, invading the brain. Duration from two to three months.	Inoperable. Growths in the lungs, the abdomen, the liver, &c.	A. W. Ormond: Transactions of the Royal Medical and Chirurgical Society, vol. lxxxix.
8	3½ years.	Ossifying sarcoma of the distal phalanx of the great toe. Three months' history.	Amputation. Early result good; late not stated.	M. E. Valude: Revue des Maladies des Enfants, vol. i., p. 83.
9	6½ ,,	Parosteal sarcoma from the posterior part of the great trochanter of the femur. Two months' history.	Removal. Early result good; remote not stated.	Ibid.
10	6 weeks.	"Sarcome fusiforme" of the forearm.	Amputation. Early result good; remote not stated.	M. Glück: Ibid., vol. xvi., 1898.
11	8 years.	Round-celled sarcoma of the middle of the fibula. Eight months' history.	Amputation. Early result good; remote not stated.	Museum of the Royal College of Surgeons of England (No. 1638 c).
12	9 ,,	Sarcoma of the body of the scapula. Three months' history. Rapid growth and early muscular infiltration.	Excision of the scapula. Recurrence six months later.	Same museum (No. 1640 D).
13	8 ,,	Sarcoma of the femur. From five to six months' history.	Inoperable. Secondary growths in the skull, the right tibia, the heart, the lungs, and the iliac glands.	Same museum (No. 1646 A).
14	7 ,,	Sarcoma of the upper part of the left humerus. Rapid increase.	The patient died four months after amputation. The lungs infiltrated with growth.	Same museum (No. 1647).
15	4 ,,	Chloroma, round- and spindle-celled, of the vault and the base of the skull. Ten weeks' illness. Rapid growth.	Inoperable. Extensive metastases.	St. Bartholomew's Hospital Museum (No. 437 G).
16	1½ ,,	Round-celled sarcoma of the vault and the base of the skull. Rapid growth.	Inoperable. Extensive metastases.	Same museum (No. 437 B).
17	4 ,,	Sarcoma of the body of the scapula. Seven weeks' history. Rapid growth.	Inoperable.	L. B. Rawling.
18	5 ,,	Chloroma of the base of the skull and the membranes. Rapid growth.	Inoperable. The patient died in two and a quarter months. Very extensive metastases.	V. Gade: Archiv für Kinderheilkunde, 1886, p. 127.
19	5 ,,	Sarcoma of the upper jaw. Three months' history. Rapid growth.	Removal of the upper jaw. Early result good; remote not stated.	Weinlechner: Archiv für Kinderheilkunde, vol. lxxx., p. 298.
20	(?)	Melano-sarcoma appearing at the inner angle of the orbit.	Two extirpations; recurrence; death.	V. Wiesner: International Journal of Surgery.
21	9 years.	Round-celled sarcoma of the femur. Three weeks' history. Rapid growth.	The patient died six months later.	W. Ost: Jahrbuch für Kinderheilkunde, vols. xl.-xli.
22	6½ ,,	Spindle-celled sarcoma of the head of the tibia. Six months' history.	The patient died two months after admission. Extensive metastases.	Ibid.
23	4 ,,	Mixed round- and spindle-celled sarcoma of the nose and jaw.	Removal. Recurrence. Metastases. Death.	Ibid.

[1] A. T. Cabot: Boston Medical and Surgical Journal, October, 1896.

scapula and forwards to the axilla. The child recovered from the operation but the growth recurred three months later and death took place five months after the amputation.

Many cases have been published of sarcoma in very young children and here and there cases are recorded in which the tumour was of congenital origin. The genito-urinary tract has probably received more attention than any other region, but a rather hasty research into literature soon tended to show that the osseous system would probably occupy a high position in the scale if a complete record were made. This came rather in the nature of a surprise and induced me to prolong the search further in order to elucidate certain details and especially to gauge, so far as possible, the value of surgical procedures. Two other cases were soon brought to my notice, both treated at St. Bartholomew's Hospital. One was under the care of Dr. S. J. Gee and the other was recently in the ophthalmic ward under the care of Mr. W. H. H. Jessop. The specimens are preserved in the museum and the following brief abstracts are taken from the museum catalogue.

CASE 1 (under the care of Dr. Gee).—Part of a calvarium of a child infiltrated with masses of a tough reddish sarcomatous growth. The masses are numerous and give the exterior of the cranium a knobbed and pigmented appearance, whilst they project as large tumours into the cavity of the skull. Microscopically, round-celled sarcoma. From a boy, one and a half years. Three months' history of swelling. Metastases in the nine lower ribs on the right side, the ten upper ribs on the left, the whole pelvis, both femora, all lumbar and cervical glands, right lobe of liver, and right suprarenal.

CASE 2 (under the care of Mr. Jessop).—Portion of a skull showing infiltration with chloroma. The supra-orbital regions are occupied by a large rounded mass of growth, greenish in colour and symmetrically disposed. These growths meet in the middle line and have infiltrated the temporal muscles and the lower surface of the orbital plate. The vertex is extensively involved by similar green deposits, patchily distributed beneath the pericranium. On the inner surface of the skull the sagittal and coronal sutures appear as green lines of growth, while the parietal eminences have on this aspect a green and granular colour, resulting from an extension into the bones of deposits in the dura mater. Microscopically, a sarcoma, mostly round-celled, in places spindle-celled. From a child, four years old, who died after ten weeks' illness. Two weeks before admission the right eye became prominent. The proptosis rapidly increased and became bilateral. Great restlessness and vomiting marked the concluding stages. The autopsy, limited to the head, showed also invasion through the dura mater of the temporo-sphenoidal lobe.

The table on page 353 supplies brief details of 23 cases of sarcoma of bone in children below nine years of age.

These 23 cases, dating back to the year 1875, are gathered together from some of the more important journals on children's diseases and from the museums of the Royal College of Surgeons of England and St. Bartholomew's Hospital. They are but few in number and this comparative rarity of sarcoma of bone in young children is further emphasised by both von Mauderli and Ost. Von Mauderli[2] states that during a period of 20 years only 10 cases of sarcoma of any organ or region were admitted into the Basle Children's Hospital. Ost[3] reports that five cases only were treated in the Pester Hospital, a hospital with an out-patient department of 4000 cases annually. Of von Manderli's cases three were of the nature of a "multiple sarcomatous invasion" and no statement is made as to the particular organs affected. Of the remaining seven four were of osseous origin—malignant epulis, fibro-sarcoma of the upper jaw, spindle-celled sarcoma of the femur, and myxo-sarcoma of the internal malleolus of the tibia.

The 23 cases, though few in number, afford useful information with regard to the course of the disease. Heredity appears to have no place, trauma is the exception rather than the rule, and age is immaterial. Taking nine years of age as an arbitrary maximum, seven cases were seen between 0 and 3, eight between 3 and 6, and seven between 6 and 9. Males are more prone to the disease in the rough proportion of three males to two females. Possibly a complete record of all published cases might show that no part of the osseous system is exempt from primary sarcomatous invasion; but certain bones show at any rate a special liability, as is shown in the following table:—

Bones of the skull, especially of the frontal and orbital regions	7 cases.
Femora especially the lower end	5 ,,
Scapulæ	4 ,,
Upper jaw	3 ,,
Fibula, middle of	1 case.
Tibia, head of	1 ,,
Toe	1 ,,
Humerus, head of	1 ,,
Forearm	1 ,,

[2] Von Mauderli: Archiv für Kinderheilkunde.
[3] Ost: Jahrbuch für Kinderheilkunde, vols. xi.–xii.

Microscopically any form of sarcoma may be present. In some of the cases the minute structure is not specified. The next table shows that the round-celled variety is the most common.

Round-celled sarcoma	7 cases.
Mixed round- and spindle-celled	2 ,,
Spindle-celled	2 ,,
Myxo-sarcoma	1 case.
Ossifying sarcoma	1 ,,
Chloroma	2 cases.
Melanotic	1 case.

The two cases of chloroma originated in the anterior part of the base of the skull, the growth spreading rapidly and widely into the neighbouring hard and soft parts, both inwardly and outwardly. The melanotic case, appearing first as a tumour at the side of the base of the nose, is included in the list on the grounds that the actual primary seat of the disease was doubtful and that the growth expended itself mainly on the neighbouring bone. In nearly all the cases the tumours were of a highly malignant character, involving the adjacent parts and corresponding lymphatic areas at an early date. Metastases are the usual feature, the osseous system the most frequently affected, and the skull bones again showing a special predisposition.

Summary of results.—11 cases were inoperable from the first, mainly on account of the anatomical situation of the tumour. Five patients died after operation with local recurrence or general dissemination. Six patients recovered from the operation, five of these being reported at so early a date that the ultimate result was impossible of determination. In one case, that reported by Curtis (Case 6), the result was most satisfactory, the child being well at the present date, several years after operation. Of the 32 cases reported by Ost 22 died, 11 after operation. The remaining ten patients all recovered from operation, the early result being all that could be desired. Of these ten cases, however, seven were of the nature of "epulides," the malignancy of which tumours is certainly open to doubt. The next table shows the regions which were affected in all those cases which promised well.

1. Ost's cases.	2. Von Manderli's cases.	3. Cases collected by the writer.
7 epulides.	1 epulis.	1 acromion process (No. 6).
1 tibia.	1 tibia.	1 femur (No. 9).
1 clavicle.	1 upper jaw.	1 upper jaw (No. 19).
1 metacarpus.		1 forearm (No. 10).
		1 fibula (No. 11).
		1 great toe (No. 8).

On combining the three groups a total of 59 cases of sarcoma of bone in young children is arrived at. 40 of these cases died at an early date, some inoperable, others after operation, whilst 19 recovered from operation. One patient is known to be well several years later but the ultimate result in the other 18 cases is not stated, the cases being reported soon after the post-operative recovery. It is obvious, therefore, that surgical procedures are generally useless unless the case be diagnosed and operated on at an early date, the removal being so planned that the tumour is freely and widely extirpated.

Montagu-street, W.

FIBROIDS OF THE UTERINE CERVIX.

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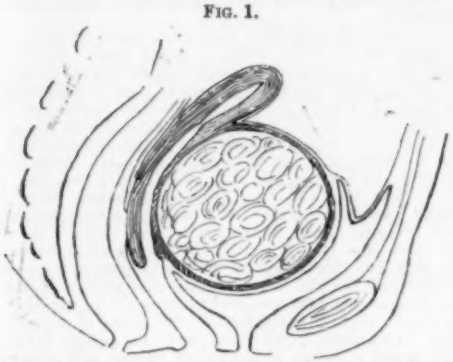
SEVEN years ago I had to operate on a case of cervical fibroid so large and so firmly jammed in the pelvis that its removal by an ordinary hysterectomy appeared to be a hopeless task. I had read Howard Kelly's articles on splitting the uterus in difficult cases of pyosalpinx, and it struck me that by splitting the uterus down its centre on and into the tumour its removal might then be possible. To my surprise when the tumour capsule was divided the tumour turned out easily and almost bloodlessly, then the two halves of the split uterus were readily removed, and the operation was completed as an ordinary supravaginal hysterectomy, the cervix being left behind as a stump. Since then I have

performed a similar operation between 20 and 30 times without any mortality.

Bland-Sutton [1] mentions that such an operation may occasionally be needed for cervix fibroids, but several of my surgical and gynæcological friends who have seen me do this operation have been impressed with its simplicity and, not having heard of it before, suggest that I should describe it. I am the more inclined to do this because there can be no doubt that the safety of serious operations depends more than anything else upon their performance in definite stages, each one of which can be seen and perfected before undertaking the next. Only experience enables such steps to be laid down satisfactorily, but when they are the operation is robbed of its risks. No better illustration of the truth of this could be found than the ordinary supravaginal hysterectomy for fibroids. 15 years ago this operation was one of great danger; now it is not more serious than ovariotomy or any other major abdominal operation which can be performed with the smallest risk.

The accompanying diagrams made by Mr. W. G. Richardson illustrate the steps of the operation in an ordinary case. The abdomen is opened in the Trendelenburg posture, the intestines are packed off with sterile gauze wrung out of hot normal saline solution, and the uterus and tumour are exposed by a retractor at the lower angle of the wound. The fundus of the uterus is caught on each side by volsellum forceps and drawn upwards and forwards into view. The round ligaments are clamped by forceps on either side and divided between two pairs, one above and one below. The peritoneum covering the lower part of the uterus and

FIG. 1.

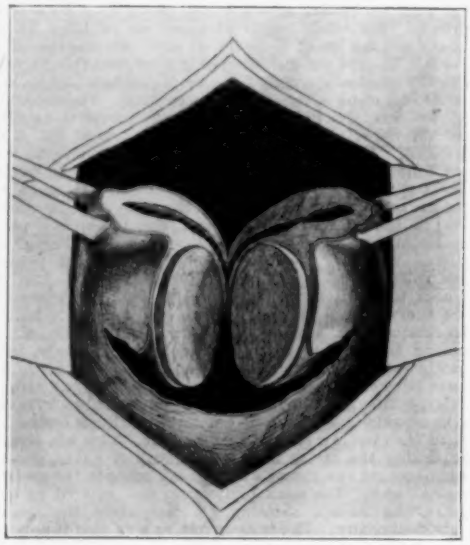


Sagittal section of a tumour involving the anterior lip of the cervix.

tumour is cut through transversely between the round ligaments and sponged downwards. The uterus is next split [2] from its fundus down the middle line well into the tumour.[3] The edges of the tumour made distinct by retraction of the divided capsule are caught in volsellum forceps and the tumour is enucleated by the finger. This has, in my experience, always been easy and accomplished with trifling loss of blood. After enucleation of the tumour its cavity quickly contracts, reducing the parts left to manageable dimensions. The bed of the tumour [4] is cut transversely from the middle line outwards, first on one side and then on the other, and the body and upper portion of the cervix are turned out and up exposing the uterine vessels, which are clamped, divided, and tied. The remainder of the broad ligament is divided outwards and upwards till the infundibulo-pelvic ligament containing the ovarian vessels is reached. These are clamped, divided, and tied. The uterus and its appendages are then removed. The anterior and posterior lips of the stump of the cervix left are sutured and the cervical stump is fixed to the round ligaments on each side. Finally, the peritoneal flap in front is made to cover and protect the whole by three or four interrupted catgut sutures.

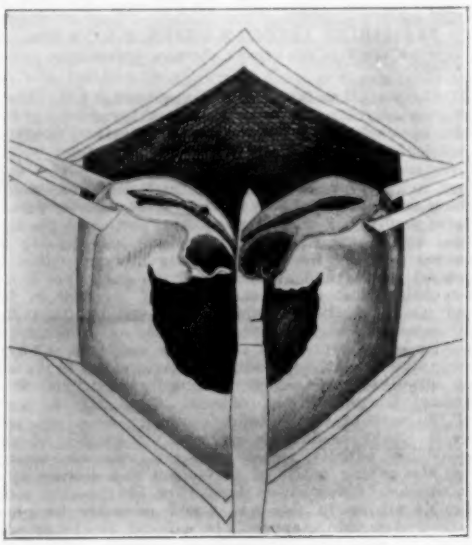
The following notes refer to the largest and most difficult case of this sort that I have dealt with. The patient, a woman, 45 years of age, was married and had eight children, the youngest being three and a half years of age. She noticed during her pregnancy that she was not the same shape as on previous occasions and after a tardy labour a deformed child was born dead. Since the confinement she had been troubled by hæmorrhages and difficulty in micturition. On admission her abdomen and legs were much swollen. Round the umbilicus the abdominal measurement was 42 inches. A fluid thrill was felt in the abdomen from side to side.

FIG. 2.



Uterus and tumour divided in the middle line. Peritoneum covering the anterior surface of the tumour cut away for purposes of illustration.

FIG. 3.



Transverse division of the cervix from the middle line. Preliminary ligature of the uterine artery.

[1] Essays on Hysterectomy, 1905.

[2] A small amputating knife is a suitable instrument for this purpose.

[3] The diagram Fig. 2 shows the whole tumour divided but this is seldom possible and is not necessary.

[4] The diagram shows the whole tumour-bed excised. This is rarely possible

The abdomen was apparently filled by a large tumour. Per vaginam the pelvis was filled by a large firm tumour which reached downwards close to the perineum. There was a chink leading upwards between the tumour behind and the pubes in front. No cervix could be felt. The diagnosis made was: uterine fibroid jammed in the pelvis; large ovarian cyst in the abdomen.

Operation was performed on May 28th, 1903. On opening the abdomen the tumour looked like an enormous ovarian cyst with the fundus of the uterus perched on its anterior surface. The whole pelvis appeared to be filled by the growth and the broad ligament of each side was spread out over it. The tumour was absolutely fixed, and this, together with the enormous vessels lying on its surface and its huge proportion, made a formidable appearance. The abdominal incision was prolonged upwards to the ensiform cartilage and the upper part of the tumour was turned out of the abdomen. An attempt to separate the peritoneum in front was followed by such serious bleeding that after quickly arresting it by sponge pressure the abdominal aorta was steadily compressed by a sponge, thus stopping the circulation in the uterine arteries, and the infundibulo-pelvic ligaments were clamped, preventing any flow through the ovarian vessels. The uterus was now caught between two volsella and split down the centre well into the tumour, the peritoneum being pushed downwards in front. The tumour was then easily enucleated. Each half of the uterus was removed by dividing the bed of the tumour transversely outwards, the uterine arteries being readily found by relaxing the pressure on the aorta, and broad ligaments, ovaries, and tubes were taken away with the corresponding portions of the uterus. Both ureters were seen to be considerably dilated but uninjured. Some oozing persisted from the raw surface in the pelvis. This was arrested by packing the cavity with a long strip of gauze, one end being brought out through an opening made in the posterior vaginal wall. The slack peritoneum was sutured over the gauze and stump, shutting off completely the general peritoneal cavity. The tumour felt so soft that it appeared to be cystic, but section showed that it was a fibroid undergoing myxomatous degeneration. The patient made a straightforward recovery.

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APPENDICITIS IN TYPHOID FEVER.[1]

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DURING the last few years my attention has been directed on more than one occasion to the association of typhoid fever with appendicitis and to the difficulty which is sometimes experienced in the diagnosis of the two diseases. Typhoid fever may give rise to appendicitis in one of two ways: first, a true typhoid inflammation and ulceration, possibly going on to perforation, may affect the lymphoid tissue of the appendix just as it may any other portion of the intestinal tract; and secondly, appendicitis may develop in a patient suffering from typhoid fever in consequence of a general œdema and hyperæmia of the gut. For it must be obvious that during the course of the typhoid fever the whole of the gut which is affected by the typhoid inflammation—viz., the lower part of the small and the first portion of the large—is in a generally congested and hyperæmic state. And the appendix, from its situation in the midst of this disturbance, must of necessity participate in the general congestion and œdema. But any congestion of the walls of the appendix, especially when associated, as it would be in this case, with a greatly increased glandular activity, must run the risk of obstructing the narrow outlet of that organ and setting up an intense local inflammation there. The likelihood of serious trouble arising in this way would naturally be greatly increased should the appendix be stenosed, kinked, or bound down by adhesions the result of previous inflammation. There can be no doubt that the conditions brought about by typhoid fever are those likely to rouse into activity a latent or chronic appendicitis. The observations of Hopfenhausen, Rolleston, Kelly, and others have shown that not only does the appendix during typhoid fever participate in the general hyperæmia of the bowel, but that not infrequently definite specific infiltration and ulceration take place.

Rolleston[2] says that out of 60 fatal cases of enteric fever examined at St. George's Hospital the appendix was found to be altered in 14. In five of this number it was simply swollen, in seven ulcerated, and in two perforated. Olga Hopfenhausen[3] examined the condition of the appendix in typhoid fever in 30 necropsies, and in the majority of instances found that it was affected more or less, varying from a mere hyperæmia of the mucosa to extensive ulceration. Kelly[4] also records 30 cases in which the condition of the appendix during typhoid fever was demonstrated by operation or by necropsy, in most of which there had been symptoms of appendicitis during the course of the typhoid fever. In five cases the microscope gave evidence of typhoid ulcers within the appendix; in one there was ulceration without perforation; in ten perforation; in one appendicitis with abscess; in four a simple congestion with a perforation situated in the ileum; and in the remaining seven there were adhesions, flexions, or obliterative changes. He also quotes H. Christian's statistics taken from 119 necropsies on typhoid fever patients, in which 19 showed marked changes in the appendix.

The special interest of these cases to a surgeon lies, first, in the frequent difficulty of being able to determine in the early stages whether the patient is suffering from appendicitis or typhoid fever, and, secondly, when it is clear that typhoid fever is present, the difficulty of deciding whether the additional trouble in the appendix requires surgical interference or not. Some of these points are exemplified in the following cases which have come under my own observation.

The first case was that of a man, aged 33 years, who suddenly felt ill after eating a heavy meal. The illness began with a feeling of sickness and abdominal discomfort and was quickly followed by a slight rigor and elevation of temperature (100° F.). The abdominal discomfort soon developed into actual pain, at first general but within 24 hours localised to the appendicular region, where the belly wall was rigid and tender to the touch. On the following morning the temperature was 99·5°, the pulse was 100, the tongue was slightly furred, the bowels were well opened, and the patient was feeling somewhat better. That evening the temperature rose again to 100°, the pulse was 110, the abdominal discomfort increased, the pain and tenderness over the appendix were more marked, and the abdomen generally was slightly distended. The general condition was good; there were no vomiting and no further rigors, but the patient complained of severe headache. As a month or six weeks before the patient had had a mild attack of colitis accompanied by pain and discomfort about the cæcum a diagnosis of catarrhal appendicitis was made. The only symptom which suggested the possibility of typhoid fever was the continuous severe headache. But the sudden onset after a heavy meal, accompanied by a rigor in one who at the time was feeling particularly well but who six weeks previously had had discomfort in the region of the appendix, seemed to establish a diagnosis of appendicitis. For ten days the condition seemed almost stationary: the temperature remaining about 100° in the evening, falling to 99° in the morning, the patient complaining only of the abdominal pain and distension. No evidence of typhoid fever could be detected, no spots, no diarrhœa, no albumin in the urine; splenic dulness was apparently normal but was masked by the distended abdomen. Towards the end of the second week the symptoms changed and became characteristically those of typhoid fever. The temperature rose in the usual manner, diarrhœa set in, and the Widal test repeatedly showed a marked positive reaction. The patient recovered after the characteristic enteric convalescence.

It seems probable that the above case was one where an atypical attack of typhoid fever aroused a latent appendicitis, for three years after this attack the patient developed an unmistakeable acute appendicitis.

The second case was that of a youth, aged 21 years, who first went to the Queen's Hospital in December, 1904, complaining of a slight right inguinal hernia. As he was unwilling to have it cured by an operation he was fitted with a truss. On Feb. 21st, 1905 (two or three months later),

[1] A paper read before the Midland Medical Society.

[2] THE LANCET, May 21st, 1898, p. 1401.

[3] Revue Medicale de la Suisse Romande, 1899, p. 105.

[4] The Vermiform Appendix and its Diseases, Philadelphia, 1905, p. 436.

he again went to the hospital complaining of pain in his abdomen which he thought was due to the pressure of the truss. The lad looked decidedly ill and it was with considerable difficulty that he could be got to describe his symptoms. However, his mother later gave us the following history. He had been quite well up to ten weeks before, when he was suddenly taken ill with pain about the appendix and vomiting. The attack lasted four days and then the lad was able to resume his work. But a fortnight later he was again taken ill in the same way. Altogether he had four such attacks previously to his admission into the hospital. The last illness had begun four days before he was admitted and he complained of feeling tired out and low-spirited and of having a dull headache. As he was being taken to the ward he had a severe and prolonged rigor. His condition as noted then was: temperature, 102·4° F.; pulse, 104; tongue generally furred though not markedly so; chest normal; abdomen not distended, very slightly tender to the touch all over; no rigidity of the abdominal muscles could be detected nor any special tenderness over the region of the appendix; urine normal—there was no albumin. A provisional diagnosis of appendicitis was made and the patient's friends were sent for in order to give a clearer account of his history and to consent to an operation. During the evening the temperature rose to 104·8° and slight bilious vomiting set in. An operation was then performed, the usual incision being made in the right iliac region. On opening the peritoneum two or three ounces of turbid sero-purulent fluid escaped. The appendix was found to be thickened and inflamed, and near its base showed a round perforation which would admit the tip of the little finger. The appendix was ligatured and removed, the wound being left open and packed lightly with iodoform gauze. The patient stood the operation well and in many ways his general condition immediately improved. The vomiting ceased and the pulse became slower and stronger, but the temperature kept up at about 102° and the general mental dulness and apathy increased. The tongue became more furred, dry, and brown. On the fifth day after admission the stools became decidedly liquid and pea-soup-like in character and one or two rose-coloured spots were noticed on the abdomen. From this day on the symptoms of typhoid fever were pronounced. The blood examination gave a marked Widal reaction. The temperature began to fall on the eleventh day after admission, reaching the normal on the fourteenth. The convalescence was uninterrupted.

This case was in many ways very similar to the first. In both there was a history of previous trouble in the appendix and at the outset of the typhoid fever the appendix in both cases became acutely inflamed, giving rise to symptoms which completely masked the typhoid fever. In both cases it is probable that the appendicular trouble was due to the rousing up of the simple latent inflammation in consequence of the general hyperæmia of the gut and not to the true typhoid ulceration of the appendix. Unfortunately, the opportunity of microscopically examining the appendix removed from the second case was not embraced, the case at that time being regarded as an ordinary perforative appendicitis. Macroscopically, the perforation had all the appearance of a simple inflammation.

The third case was that of a man, aged 43 years, who was admitted to the Queen's Hospital suffering from abdominal pain and vomiting, and whose temperature was 101° F. and pulse 93. The patient began to feel ill about a fortnight before admission. He felt weak and low-spirited and suffered from constant headache and occasional vomiting. For the first week he was able to go on with his work but afterwards had to keep his bed on account of the increasing pain and tenderness in the right iliac region. Eighteen months previously the patient had had a similar though slighter attack. On examination there was found to be a large firm swelling, tender to the touch, in the region of the appendix. The abdomen generally was somewhat distended, but the pain and tenderness were strictly localised. The general condition was good. The vomiting was becoming less frequent and the patient, except for headache and depression, felt decidedly better than he had done a few days before. The urine was normal save for a faint cloud of albumin. The result of a blood count showed 12,000 white corpuscles per cubic millimetre. Under an anæsthetic an incision was made over the appendix, and a quantity of fœtid pus was evacuated. The abscess cavity was lightly packed with gauze and the wound was left open. As the cavity was well shut off from the rest of the abdomen the prognosis seemed most favourable. An improvement immediately followed the operation. The temperature fell to normal and the pulse to 80; the blood count gave 9000 white cells per cubic millimetre; albumin was still present in the urine. A few days later it was noticed that though the local condition was steadily improving the general condition as steadily became worse. The patient gradually became dull and apathetic and began unconsciously to pass urine and liquid stools into the bed. All pain and tenderness in the abdomen had gone but the headache persisted. The temperature, which after the operation had fallen to normal, gradually rose again and then maintained for 16 days a fairly constant level, ranging between 100° and 101°. The abdomen was slightly distended but quite flaccid and free from tenderness; the blood count yielded under 9000 white cells per cubic millimetre. The Widal reaction was tested with a negative result, no rose spots were seen, and the splenic dulness only slightly increased; albumin in the urine was more marked. A day or two later the blood was again examined for the Widal reaction with a doubtful result; and again about the end of the second week and this time with a positive reaction. Towards the end of the third week from the date of the operation the temperature gradually fell to normal and the patient slowly revived from his apathetic condition and became convalescent.

The three cases which I have just quoted are, I think, sufficient to show how difficult may be the task of deciding whether a patient is suffering from typhoid fever or appendicitis. It would be easy to instance similar cases where experienced surgeons have been misled by the symptoms, and an operation has been performed only to reveal a healthy appendix, and either the subsequent symptoms or a necropsy have shown that the disease was typhoid fever. And, again, instances might be quoted where typhoid fever has been diagnosed by the physician and perforative appendicitis demonstrated by the pathologist.

Mühsam[5] relates one case of typhoid fever in a man which he mistook for appendicitis and operated upon. He found the appendix quite free from any s gn of fresh inflammation, but on the surface of the cæcum evidence of an ulcer affecting the mucous membrane, though the serous coat of the intestines was intact. The ulcer was recognised as typhoid in character; the base of it was invaginated into the gut and fixed by a couple of rows of sutures. The patient later developed typical symptoms of typhoid fever but eventually recovered.

Rendu's case[6] was that of a young woman, aged 29 years, who was taken with rigor and fever and pain over the appendix which was diagnosed as appendicitis and operated upon. A reddened but not adherent appendix was removed and the wound was closed. The patient died five days later and the post-mortem examination showed typical typhoid ulcers in the bowel but no perforation.

Moizard[7] relates the three following cases of typhoid fever which simulated appendicitis. The first case was that of a girl, aged 12 years, who was suddenly taken with rigor, vomiting, and pain in the iliac region, but with little muscular rigidity. On the eighth day the typical typhoid rose-rash appeared. The second case was that of a boy, 14 years of age, who suddenly showed symptoms of acute appendicitis. At the end of some days the pain died away and typical typhoid fever symptoms developed. In the third case the symptoms suggesting appendicitis persisted sufficiently long to lead to an operation for appendicitis being performed, which, however, demonstrated that that organ was intact.

Maurange[8] tells of a case of a man who, after three days of constipation, was taken with a rigor and fever. Symptoms of acute appendicitis developed and on the third day he was operated upon and an atrophied appendix, without any sign of recent inflammation, was removed. Subsequently typical symptoms of typhoid fever developed. The patient recovered.

Box and Wallace[9] relate the case of a man, aged 51 years, who was suddenly taken ill and whose temperature was

[5] Deutsche Medicinische Wochenschrift, No. 32, 1901.
[6] La Semaine Médicale, No 6, 1901.
[7] Journal de Médecine et de Chirurgie Pratiques, July 10th, 1899.
[8] Gazette Hebdomadaire, Sept. 28th, 1899.
[9] THE LANCET, June 6th, 1903, p. 1588.

102° F. and whose pulse was 120. He was mildly delirious at night and had diarrhœa with pea-soup-like stools. In the third week of his illness he had three large hæmorrhages of bright red blood from the bowels. Typhoid fever was diagnosed, but at the necropsy no sign of typhoid fever could be found, but an abscess in the region of the appendix.

The liability to an error in the diagnosis is naturally increased by the laudable desire of modern surgery to operate at the earliest moment in cases of acute appendicitis. Little reliance can be placed upon the history of the onset of the illness or upon the ordinary clinical symptoms in these doubtful cases. Even that prominent and frequent sign, the presence of local tenderness with muscular rigidity of the abdomen, to which so much attention is justly paid in establishing a diagnosis of acute appendicitis is not only sometimes met with in typhoid fever but is frequently absent from the severest forms of acute appendicitis where, in consequence of intense toxæmia, the patient lies in a dull and apathetic state. The old classical symptoms of acute appendicitis—viz., fever with abdominal pain, localised tenderness, and muscular rigidity—whilst holding good in the main may one or all be absent in these cases. Even within the last few weeks I have had three illustrations of this point, where in each instance although the appendix was shown at the time of the operation to be gangrenous, yet there was complete absence of local tenderness, local pain, and muscular rigidity, and the temperature never rose to 100° F. All three cases occurred in children.

Again, the Widal reaction, which is so valuable when present, unfortunately generally fails to show itself before the second week of typhoid fever and may be as late as the third, fourth, or fifth week of the disease. It is therefore frequently lacking at a time when the difficulty of the diagnosis is felt. The leucocyte count is probably the most valuable aid which we have in establishing the diagnosis. For the count in typhoid fever is almost always low, rarely exceeding 8000 to 10,000 per cubic millimetre, whilst a high count is the rule in acute appendicitis. But although the leucocyte count is thus usually of great assistance, it may prove wofully misleading in exceptional instances, where the rule that typhoid fever inhibits leucocytosis fails to hold good. Lewis, quoted by Kelly, describes a case where a patient had a leucocytosis of 10,000 which rose in three days to 18,000. A diagnosis of appendicitis was made and an operation was performed. But the case proved to be typhoid fever, the appendix not being involved, and he tells of another case where there was a leucocytosis of 17,000 and on operation a typhoid ulcer was found in the appendix but no perforation. Again, it is well known that not infrequently the most virulent cases of acute appendicitis are unaccompanied by any increase in the number of leucocytes. The value of the count is greatly enhanced if, instead of merely noting the number of white cells, a careful differential leucocyte count is made in order that the relative proportion of the polynuclear cells to the total leucocytosis may be demonstrated. For it is the disproportionate increase of the polynuclear cells which is so significant in perforative or gangrenous appendicitis.

The fact that albumin is more frequently present in the urine of typhoid fever patients than in that of those suffering from appendicitis may be some guide in association with other symptoms but by itself it is, of course, valueless.

There is not likely to be much difference of opinion as to the advisability of operative interference in those cases where the extent to which the appendix is involved can be assumed from the general symptoms. For it is obvious that if an operation can be avoided or postponed it is better to do so; the typhoid fever patient already has enough to tax his strength without a laparotomy being added. Therefore, so long as there is no reason to believe that either gangrene or perforation of the appendix has taken place a strictly conservative policy is indicated. But should the symptoms point to perforation then an immediate operation is necessary. A simple appendectomy in the early stages of typhoid fever has usually a favourable prognosis. But when it has to be undertaken in the third or fourth week of the disease the cases recorded show the heavy mortality that one would expect. Even those operations, which in themselves are comparatively slight, have a high mortality when the patient is exhausted by the typhoid fever.

Birmingham.

SANITARY CONDITION IN RELATION TO INFANTILE MORTALITY.[1]

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THE infantile mortality has been usually considered as specially deserving of attention as an index of sanitary condition. The indications which it affords, however, are complex and depend in no small degree on social conditions. Partly it is associated with maternal health and care, partly it is dependent on want of cleanliness in and about the house, and partly it shares in the general effects of bad housing. This is the opinion of Dr. J. Niven of Manchester.[2] Sir William T. Gairdner[3] would regard the rate of infantile mortality as even a more sensitive test of the sanitary condition of a district than the death-rate at all ages.

Dr. Ralph Vincent, in his evidence before the Committee on Physical Deterioration, said that Dr. A. B. Hill of Birmingham has shown that "sanitation has nothing to do with infantile mortality."[4] Dr. Vincent[5] in his book "The Nutrition of the Infant," appears to quote Dr. Hill's own conclusion as the result of an analysis of the condition of houses in regard to sanitation in relation to infantile mortality: "Only one conclusion can be drawn. ..... It is that the sanitary conditions to which attention was directed *could not be shown* to have any evident connexion with the infantile mortality." The italics are mine. This is a much more modified and a much more understandable conclusion than the definite statement: "Sanitation has nothing to do with infantile mortality." It can readily be understood how difficult it is from the examination of any district or districts in which *many* factors are operative to come to an absolute conclusion regarding the exact extent to which any *one* of the factors concerned may act. This difficulty has been abundantly illustrated in discussing the relative influence of three factors in the causation of infantile mortality—namely, the industrial employment of married women, overcrowding, and a high birth-rate.[6] Taking either factor separately, it was shown that the case could be made out either for or against its influence, but, taken all together, the operation of each is shown to be a question of degree.

What, then, is the evidence as showing that insanitation cannot but be regarded as a factor in infantile mortality?

1. The infantile mortality of rural England is lower than that of urban England. While quite recognising that many places in rural England are less sanitary than many places in urban England, still, on the whole, rural England is much more sanitary than urban England.

2. Taking things as they are in England and Wales, it must be remembered that a considerable proportion of infants are hand-fed. This opens up the way, so to speak, for the play of insanitary conditions through the influence of food. Fatal diarrhœa in hand-fed children is, on this account, probably proportionate to the degree of insanitation to which the infant is exposed. Infantile diarrhœa is twice as fatal in towns as in the country.

3. Measles is a very fatal disease amongst young infants, and it is especially so among those living under insanitary conditions. Deficient ventilation, in particular, tends to a fatal issue. It is much more fatal in towns than in the country. Whooping-cough is less influenced by the same conditions and hence its fatality in towns is less marked.

4. It can hardly be contended that an infant brought up in the dark, damp, congested areas of slums has not less resistant power than one brought up under more sanitary conditions. If it has less resistant power it must more readily fall a victim to disease.

5. The influence of general insanitary conditions as they affect great towns may be measured by one or another of three death-rates at all ages and the corresponding infantile mortality may be studied. These rates are: (1) the pulmonary tuberculosis death-rate; (2) the diarrhœa death-rate; and (3) the "fever" death-rate.

[1] Part of a thesis for the degree of M.D.

[2] Niven: Report on the Health of the City of Manchester, 1903, p. 11.

[3] Brit. Med. Jour., vol. ii., 1902, p. 642.

[4] Vincent: Minutes of Evidence, Committee on Physical Deterioration, p. 442.

[5] Second edition, p. 290.

[6] See THE LANCET, July 21st, 1906, p. 142: Some Social Factors in the Causation of Infantile Mortality.

The pulmonary tuberculosis death-rate, while a good test of the sanitary condition of any town, is yet liable to well-marked occupational incidence, and in so far it is an unsuitable index for comparison with infantile mortality.

The diarrhœa death-rate is regarded as a very sensitive test of the salubriousness of any district. But the diarrhœa death-rate is itself largely made up by infant deaths and would, therefore, be unfair to use for comparative purposes.

The "fever" death rate is one which does not to any appreciable degree affect infants. Under "fever" the Registrar-General includes deaths from typhoid fever, typhus fever, and simple continued fever. This death-rate is universally regarded as a good test of the sanitary condition of any district. The rate has fallen step by step with improved sanitation during half a century.

In the following table,[7] of the 33 large towns in England and Wales, the ten towns with the highest and the ten towns with the lowest average death-rates from "fever" at all ages in the decennium 1893–1902 are set out, with the corresponding average infantile mortality:—

Highest fever-rates.			Lowest fever-rates.		
Town.	Fever death-rate 1893–1902.	Infantile mortality 1893–1902.	Town.	Fever death-rate 1893–1902.	Infantile mortality 1893–1902.
Sunderland ...	0·50	175	Newcastle	0·15	173
Salford	0·35	202	Swansea	0·14	165
Liverpool	0·33	189	Oldham	0·14	160
Preston	0·31	232	Huddersfield ...	0·14	146
Nottingham ...	0·30	185	Bristol	0·12	144
Wolverhampton	0·29	188	Brighton	0·12	156
Sheffield	0·29	182	Cardiff	0·11	159
Bolton	0·29	175	Plymouth	0·10	172
Birkenhead ...	0·29	172	London	0·09	158
West Ham ...	0·27	169	Croydon	0·04	141
Average ...	0·32	187	Average ...	0·12	157

It will be noted that the association of insanitation (as evidenced by the "fever" death-rate) and high infantile mortality is very regular.

6. The factor "overcrowding" includes many conditions which would rightly be described as insanitary. One need mention only the manifest pollution of air, soil, and water which life under overcrowded conditions entails in one way or another. Overcrowding has been proved to demonstration to conduce to a high rate of infantile mortality.[8] Of all the conditions which make up "overcrowding" as a factor in infantile mortality has it to be contended that those which are insanitary have no effect?

7. If sanitation has nothing to do with infantile mortality the infant of the slums, provided other factors could be eliminated, should compare at least equally with infants in the best parts of rural England. No such comparison, however, is possible; but a study of the infantile mortality among the Jews offers some approach to it. It is well known that Jewish parents are very solicitous of their offspring. The poverty of the Jew is not allowed to affect the material comfort of the child. Jewish mothers do not work and they suckle their children at the breast. In these respects, therefore, there is reason to believe that the Jewish infant compares favourably with the non-Jewish infant in the best parts of rural England. Dr. Niven[9] found the infantile mortality in the district of Cheetham, which is largely Jewish, was in 1899, 104; in 1900, 114; in 1901, 124; in 1902, 97; and in 1903, 108. This is the strongest evidence that I am aware of in support of the statement: "Sanitation has nothing to do with infantile mortality." These are very small rates for infantile mortality as it goes in large cities, and they would almost suggest that insanitary surroundings have no share in its causation. Nevertheless, certain rural districts in England come out year after year with rates which compare favourably with these. Thus, Wiltshire had an average infantile mortality of 101 in the quinquennium 1897–1901, 98 in 1902, and 85 in 1903. Herefordshire had an average of 110 in 1897–1901, 108 in 1902, and 84 in 1903.[10] One may therefore conclude that the city Jew is so much the worse for insanitary environment. The difference is very small and emphasises what has already been indicated, that before insanitary surroundings can act in a pronounced manner there must be a predisposing cause and this will usually be improper food. Moreover, there is no reason to believe that these rates, small as they are, indicate the possible zero in infantile mortality and the probability is that with improved sanitation improvement is possible in each.

No one of these arguments alone is perhaps enough to establish that insanitation is a factor in infantile mortality, but taken altogether I believe they demonstrate it.

Huddersfield.

[7] Compiled from the Registrar-General's Summary, 1903, Table 3.
[8] THE LANCET, loc. cit.
[9] Letter to the writer from Dr. Niven, March, 1905.
[10] Sixty-fifth and Sixty-sixth Annual Reports of the Registrar-General.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF SEBACEOUS HORN OF THE HEAD.

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THE patient, a woman, aged 38 years, was admitted to the Elder Hospital, Govan, in October, 1906, having been sent to me by Dr. Alex. Campbell of Govan. The history she gave was to the effect that a small swelling of the size of a pea appeared on the left side of her head when she was 22 years of age. This swelling increased slowly in size until two years later when she received an accidental knock upon it, the skin being broken by the impact. Suppuration set in and continued for some time, and as it subsided she noticed some three or four little projections growing from the site. These projections grew slowly until some four years ago when all but one were removed by operation (why one was left, I have been unable to discover). The remaining projection did not give her much trouble until six months ago when it began to grow rapidly.

Apart from the inconvenience caused by the presence of the horn she had long been troubled by headaches of varying severity on the left side of the head. The site, shape, and general appearance of the horn are well shown in the accompanying illustration, as is likewise the little eminence with infolded skin margins from which the

horn grew. The horn had a distinctly horn-like structure, had a rough surface, and was 2¼ inches in length from base to tip apart from the twisting. While firmly attached to its place of origin it was yet freely moveable, owing to the extreme mobility of the cutaneous base. An operation was performed on Oct. 26th, the horn, together with a portion of the surrounding scalp, being excised under a local anæsthetic. The part was very richly supplied with blood. The patient made an uninterrupted recovery, the wound healing aseptically, and she has since been free from headache.

Glasgow.

A NOTE ON THE CONTINUOUS USE OF OXYGEN IN A CASE OF BRONCHO-PNEUMONIA IN A CARDIAC SUBJECT.

BY BERNARD E. MYERS, M.D. EDIN., M.R.C.S. ENG.

WHEN I first saw the patient on Nov. 25th last he was suffering greatly from dyspnœa. There had been several cases of influenza in the house and he had been feeling ill himself for some five days. His chief complaint was great difficulty in getting his breath. There was also a feeling of giddiness. His colour was distinctly bad. The respirations were 58 per minute; the pulse was 80, irregular in time and force, and intermittent, the pressure at the radial artery being 120 millimetres; and the temperature was 98° F. It may here be remarked that his temperature all through his illness was very low, only once going even up to 99°. The breath sounds everywhere were rather harsh and at the left base broncho-vesicular. Moist sounds (some very coarse) were to be heard all over both lungs. The apex beat was situated in the left sixth intercostal space, just outside the left nipple line. No murmurs were detected but the action of the heart was very irregular and of a tumbling nature. I thought that the cardiac condition was probably due to an old pericarditis. He was given a mixture containing iodide of potassium, compound tincture of benzoin, oxymel of squill, and tincture of senega every three hours. Oxygen was also ordered, at first every half hour for two minutes, but later it was given every ten minutes for three minutes.

On Nov. 29th the patient's condition was very distressful indeed and Sir Lauder Brunton kindly saw the case. His prognosis was a grave one; he advised continuing the mixture and if possible to use the oxygen continuously. This we carried out for the next 110 hours. On Dec. 1st the patient suddenly appeared much worse; the temperature sank to 96·4°, the pulse was 104 and very weak, the respirations were 36, and typical Cheyne-Stokes breathing set in. The percussion note was now impaired all over both lungs and he was becoming drowsy. A hundredth of a grain of strychnine was given and the temperature soon went up to 97°, then to 97·4°, and in several hours to 98°, the pulse and respirations slightly improving also. Strychnine was continued every 12 hours and on the 3rd the case was looking more hopeful but the oxygen was still kept on continuously until the morning of the 4th, when the temperature reached normal; the pulse was 62 and stronger, the respirations were 28, and the breathing was much easier. The salmon-coloured expectoration which had been present for some days was now much more copious, giving very evident relief; his colour also distinctly improved. An uninterrupted recovery was now made.

The interesting points of this case are: (1) that a person, aged 62 years, with old heart trouble recovered from a severe attack of broncho-pneumonia; (2) the excellent effects in this instance of the continuous use of oxygen for a long period; and (3) the apparent benefit of strychnine in Cheyne-Stokes breathing.

West Hampstead, N.W.

NOTE ON A CASE OF RUPTURE OF THE HEART.

BY LACEY BATHURST, M.B., B.S. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,
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THE patient, a man, aged 62 years, was admitted to the Croydon Hospital on March 17th, 1906, suffering from senile gangrene of one toe. The lymphatics became inflamed and the limb was amputated in the lower third of the thigh on March 19th. Ether was the anæsthetic used and was taken well. The stump healed well with the exception of a sinus which persisted, and on July 2nd the patient was given chloroform and a small sequestrum was removed. After this the stump healed and the patient was up and about on crutches for the greater part of the day. On Nov. 25th he spent the morning in the garden of the hospital and about 2 o'clock got into a wheeled chair and wheeled himself into the lavatory. In a few seconds another patient entered the lavatory and returned to say that the man had fainted. He was found sitting in a natural attitude in the wheeled chair quite dead.

A post-mortem examination was performed on Nov. 26th. The pericardium was enormously distended with blood clot, which was found to have made its way into the pericardium through a rupture in the left ventricle. The rupture was about one and a half inches long and was situated on the posterior aspect of the left ventricle. The heart appeared normal in other respects and the cardiac muscle was healthy and seemed to be of the normal thickness. Extensive atheromatous disease was present in the vessels but no other pathological changes were found. It seems remarkable, after the patient had undergone two operations, one under ether and the other under chloroform, that the rupture should occur while he was sitting down, apparently from the comparatively slight exertion of propelling the wheeled chair.

Croydon.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

WESTMINSTER HOSPITAL.

A CASE OF INOPERABLE CANCER TREATED WITH TRYPSIN.

(Under the care of Dr. BERTRAM ABRAHAMS.)

ON July 31st, 1906, a charwoman, aged 52 years, was admitted to Westminster Hospital under the care of Dr. Bertram Abrahams complaining of shortness of breath. She had had this dyspnœa for the past two years and it had been gradually getting worse. During the past 12 months she had also noticed the following symptoms: a cough which was much worse at night, with scanty expectoration, but no history of hæmoptysis; huskiness with complete loss of voice at times; pain in the right infra-mammary region; and loss of flesh. The most important point in her previous history was that in 1898 she had had the left breast amputated at this hospital for a "growth" and that recently she had noticed a "lump" growing at the upper end of the scar. On examination the woman was found to be much emaciated; her weight was 6 stones 1 pound 4 ounces and her height was about 5 feet 5 inches. Her voice was husky and articulation was indistinct. Her cough was hard, paroxysmal, violent, and resembled the bark of a seal more than anything else. Expectoration was scanty and frothy. The pupils were unequal (the right was smaller than the left) but both reacted to light. The larynx was normal. The superficial veins of the chest and abdomen were much distended, especially those on the right side. In the left infra-mammary region was the old amputation scar, about five inches long, and having at its upper end a hard, nodular, immobile mass of about the size of a broad bean. No glands could be felt in the axillæ or elsewhere. There was no expansion of the right thorax save for a small portion at the apex and first space. The left thorax expanded extremely well, the inspiratory excursion being larger than normal. The right chest measured half an inch more than the left. Over the right first and second spaces anteriorly the percussion resonance was diminished, vocal fremitus and resonance were increased, and the breath sounds were bronchial in character. In the lower right axillary region and extending back to the posterior scapular line was an area of complete percussion dulness with absence of vocal fremitus, resonance, and breath

sounds. There was diminished air entry but nothing else abnormal over the rest of the right lung (i.e., the lower portion anteriorly and the upper portion posteriorly). The left lung was in a condition of emphysema. The heart sounds were normal but louder than is usual. The urine contained a trace of albumin. On August 15th it was decided to try the trypsin treatment for inoperable cancer as recommended by Dr. J. A. Shaw-Mackenzie. Accordingly a blood examination was made and showed a leucocytosis of 7600. On the first day the patient received a hypodermic injection of yellow bar soap solution (40 minims) and also liq. trypsin acid. one drachm three times a day by the mouth. On the second day she received a hypodermic injection of Chian turpentine (15 minims) and also liq. trypsin acid. and elixir gland. co. one drachm of each by the mouth three times a day. On the third day the treatment of the first day was resumed and on the fourth day that of the second, and so on. This treatment was continued for 28 days and the hypodermic injections had been increased up to 20 minims of Chian turpentine and 50 minims of soap solution. At the end of this time the only alterations in her condition were (1) an increasing leucocytosis up to 14,600; (2) the weight, which at first fell to 5 stones 12 pounds 10 ounces, had increased up to 5 stones 13 pounds, then 5 stones 13 pounds 1 ounce, and, finally, 6 stones 0 pound 1 ounce; (3) the physical signs had increased, there now being a patch of diminished percussion resonance, with bronchial breathing and increased vocal resonance over the left first and second spaces; and (4) the superficial veins were now less dilated. On Sept. 11th the treatment was discontinued and the patient then remained in much the same condition, save for a slight loss of weight at first, which, however, she regained up to 6 stones 0 pound 3 ounces shortly before death. On Oct. 2nd the dyspnœa increased and after preliminary puncture 45 ounces of clear fluid were withdrawn. About one hour after aspiration had been performed the patient suddenly became very collapsed and died four hours later.

Necropsy.—At the post-mortem examination the right base was found consolidated while the right pleura was thickened and infiltrated with a cancerous growth to the extent of three-eighths of an inch in places. The left pleura was only studded in places and not markedly thickened. There was a secondary deposit in the liver. Sections showed alveolar cancer. It is interesting to note that the right pleura was the more affected, whilst the primary growth had been in the left breast.

Remarks by Dr. ABRAHAMS.—Every care was taken to give the treatment a scrupulously fair trial, Dr. Shaw-Mackenzie's written directions being strictly followed by Dr. R. Puttock, my then house physician. The notes of the case were very accurately recorded by Mr. J. A. Braxton Hicks. The treatment was given up because the patient began to complain of the repeated injections. The post-mortem and microscopical examinations were made by Dr. R. G. Hebb.

MANCHESTER ROYAL INFIRMARY.

A CASE OF FRACTURE OF THE PELVIS WITH EXTENSIVE EMPHYSEMA OF AN UNUSUAL TYPE.

(Under the care of Mr. GEORGE A. WRIGHT.)

FOR the notes of the case we are indebted to Dr. S. R. Wilson and Mr. F. Howson.

The patient, a man, aged 53 years, was riding a bicycle on August 18th, 1906, when he was knocked down and run over by a heavy brake containing some 30 passengers. The front wheel of the brake went over his pelvis. He was taken home and was seen by Mr. C. J. Dabbs. On examination by Mr. Dabbs the patient was found to be suffering from a moderate degree of shock and extensive contusions about the pelvis but no very marked or alarming symptoms were present. There was no evidence of any visceral injury and no external wound anywhere. No marked change occurred until the morning of the 20th, when on visiting the patient Mr. Dabbs found great swelling with dark discolouration of the scrotum and both thighs and his general condition seemed considerably worse. On the afternoon of the same day he was seen by Mr. Dabbs and Mr. Wright together. The scrotum was many times its natural size, black, puffy, and on percussion quite tympanitic. The upper parts of the thighs were in a similar condition. A belt of dark discolouration ran along Poupart's ligament on each side as well as over the sacrum. The lower part of the abdomen was markedly, and the whole abdomen was more or less, distended and the abdominal wall was puffy and tympanitic. A diagnosis of fractured pelvis with probable rupture of bowel and resulting escape of gas into the tissues was made and the removal of the patient to the Royal Infirmary was arranged. At that time he was in such severe pain that an anæsthetic had to be given before he could be moved into the ambulance.

On admission the man was conscious and in great pain. The legs, thighs, abdomen, and chest were swollen and emphysematous. Mr. Wright decided to operate at once. On incising the scrotum blood and odourless gas escaped freely and the swelling at once collapsed. Incisions were made in the upper and outer parts of each thigh and large quantities of broken-down tissue in shreds with disintegrated fat and much blood and gas escaped. The subcutaneous tissue was found to be detached from the deeper structures and broken up over a wide area. In the original belief that the gas had escaped from ruptured bowel the abdomen was opened in the middle line below the umbilicus. The abdominal wall contained gas but the peritoneal cavity showed no evidence of injury and contained neither blood nor gas. This wound was closed again but the others were drained. Stimulants were given. On August 21st the patient felt much better and the wounds looked well. A turpentine enema was given and his urine, which was quite normal, was drawn off. He still had a good deal of pain. At this time the emphysema practically extended from the middle of his thighs to his eyelids. His breathing became rapid and his pulse quicker and weaker. At night the temperature rose to 101·8° F. and he died at 9.30 P.M., or three and a half days after the injury. There were no signs of gangrene at any time beyond those mentioned.

At the post-mortem examination the distension was less and the wounds seemed healthy. There was no perforation of any viscus and no gas in the peritoneal cavity. The lungs were somewhat œdematous. The heart was large, fatty, and dilated, especially on the right side. There were slight sub-peritoneal emphysema and hæmorrhage. There was no fracture of the ribs but there was fracture of both rami of the os pubis near the acetabulum. The symphysis pubis was separated to the extent of about three fingers' breadth. The urethra was not lacerated. A microscopical examination of the blood and subcutaneous tissue showed the presence of a "few cocci and bacilli," but in the absence of cultures, which were not made, no conclusion as to their nature could be drawn.

Remarks by Mr. WRIGHT.—So far as my experience and reading go this case is noteworthy for the extent of the emphysema present without any communication with the exterior, for the skin was unbroken, or with any gas-containing viscus. As to the nature of the gas, beyond the fact that it was odourless we have no proof, but probably it was carbonic acid. Its source is discussed by Dr. Wilson. The fact of the presence of gas in small quantities in collections of extravasated blood is familiar enough but I have not come across any instance of such an extensive emphysema as we found in this patient. My thanks are due to Professor J. Dixon Mann for information on the subject and for the interest which he took in the question, as well as to Dr. Wilson and Mr. Howson—both skilled physiologists—and to Mr. Dabbs for the opportunity of seeing this remarkable case.

Remarks by Dr. WILSON.—In such a marked case of traumatic emphysema as that under consideration one naturally looks for some more or less obvious source of the gas, such as a penetrating wound, a fractured rib, some ruptured viscus, or for some communication with the external air. In the absence of these one is led to find some further explanation. Briefly we have to deal with an extensive emphysema of some odourless gas, probably carbon-dioxide, which gradually developed (two days) consequent upon extensive hæmorrhage into the subcutaneous tissues. Two explanations are possible. In the first place, the evolution of gas might have been due to some gas-producing bacillus—viz., the bacillus œdematis maligni or the bacillus aerogenes capsulatus. One could hardly associate any of the other gas-forming organisms with the present condition. That it was not due to the first-mentioned is shown by the extensive emphysema, the absence of gangrene, and the odourless nature of the gas evolved. It was not probably due to the second, for the emphysema to which it gives rise is usually a post-mortem production, and would also have

manifested its presence in some of the other tissues. One is forced to conclude that it arose in some way or another from the extravasated blood. Velpeau has called attention to spontaneous emphysema arising from subcutaneous extravasations of blood, especially after fractures, and the condition is well-recognised, but so far as my information goes no very extensive case has been described. According to Fischer such an emphysema is due to the liberation of the blood gases, especially carbon-dioxide, set free by the lactic acid in the contused tissue. Personally, I doubt that mere liberation of blood gases could cause so extensive an emphysema, for assuming a complete liberation of the blood gases one would only get a volume of gas equal to three-fifths of that of the extravasated blood even at normal pressure, whereas the gas seemed to be under considerable tension. However, we decided to test the matter experimentally and Mr. Howson kindly performed certain experiments which we suggested. The apparatus used was the ordinary Dupré apparatus for the estimation of urea and the effect of lactic acid of varying strengths on blood was tested. In no case was there any definite evolution of gas. Both fresh and stale blood was used and in later experiments tissue extract was added, but still no evolution of gas occurred. Bearing in mind that the case occurred during the period of excessive heat which we experienced last autumn I asked Mr. Howson to repeat the experiments at a similar temperature, which he did, but negative results were still obtained.

In conclusion, I may say that I regard the emphysema as having a very close connexion with the extravasated blood, but the exact manner of its production is still unexplained. Our experiments would seem to show that it is not due to the presence of lactic acid and we hope that further investigations will shed more light on the subject than we possess at present.

Medical Societies.

LIVERPOOL MEDICAL INSTITUTION.

A New Refractometer.—Syphilis of the Lung.—The Surgical Treatment of Focal Epilepsy.

A MEETING of this society was held on Jan. 31st, Dr. G. G. STOFFORD TAYLOR, Vice-President, being in the chair.

Dr. K. A. GROSSMANN exhibited a New Refractometer similar in principle to Marple's skiascope but comprising all the spherical lenses likely to be required in retinoscopy, without combination, arranged in double rows in four hand instruments. The instrument could also be used for ordinary estimation by means of test-types.

Dr. R. J. M. BUCHANAN, in describing the various forms of Congenital and Acquired Syphilis of the Lungs, paid special attention to the so-called "phthisis syphilitica" and contrasted the morbid anatomy and clinical symptoms of that disease with those of pulmonary tuberculosis. He urged the necessity of more careful clinical examination in cases of lung disease in order that syphilitic affections might not be overlooked. A case under his care was related in which the symptoms resembled those of pulmonary phthisis for a year; no tubercle bacilli were found in the sputum after repeated examination; discrete areas of infiltration were present in both bases, one in the left lung circular in shape and of about the size of a small orange, and one in the right lung oval and of the size of a hen's egg. These masses resembled hydatids, but a diagnosis of gummata of the lungs was made and subsequently a history of syphilis was obtained. On examination with the x rays the masses were clearly defined. The expectoration was stained with Giemsa's stain for 18 hours and spirochætæ were found. Anti syphilitic treatment resulted in amelioration of all the symptoms and in disappearance of the physical signs; a gain of 16 pounds in weight in three months was recorded and the patient had been able to resume his work and had expressed himself as perfectly well. Radiograms taken by Mr. C. Thurstan Holland before treatment were exhibited, showing the original gummata and diffuse mottling of the lungs, and others showing the gradual absorption of the gummata and disappearance of the mottling after treatment with mercury and potassium iodide.—Dr. A. NIMMO WALKER, referring to Dr. Buchanan's observation of bodies resembling the spirochæta pallida in the sputum of his case, in contradiction of the usual statement that they were absent in tertiary lesions, said that he had had the privilege of being shown by Staff Surgeon Bankart, R.N., a section of syphilitic liver stained with silver nitrate in which the spirochæta pallida was clearly demonstrated. He also alluded to the difficulty of finding the spirochætæ in patients under the influence of mercury and considered that recent observations pointed to the contagiousness of tertiary lesions and to the value of mercury in their treatment.—Dr. A. G. GULLAN referred to a case of syphilis (lip chancre) of ten years' standing in a woman, 33 years of age. For two years she had suffered from cough, hæmoptysis, and loss of flesh. Dr. McDougal had found a gumma of the left sternomastoid and infiltration of the left vocal cord. Under antisyphilitic treatment the laryngeal symptoms cleared up but some lung symptoms remaining the patient was transferred to Dr. Gullan's care, who found impaired movement, dulness, diminished breath sounds, and a few moist râles over the first, second, and third left intercostal spaces in front. Repeated examination of the sputum for tubercle bacilli gave negative results. Syphilitic treatment alone was continued and the patient in the course of a few months made an excellent recovery.—Dr. G. A. CRACE-CALVERT also spoke.

Mr. DAMER HARRISSON, in dealing with the subject of the Surgical Treatment of Focal Epilepsy, restricted himself to cases of true focal or Jacksonian epilepsy calling for direct attack upon the brain or its membranes, including craniectomy and deeper work upon the parts thus exposed. He attributed the fact that the results of operations in the past had not been more successful to two causes—viz., (1) the relatively late period at which operations had been performed; and (2) the adhesions resulting from operations upon the skull, membranes, and brain. In his own experience the use of fresh egg membrane, as recommended by Leonard Freeman in 1898, had largely met the adhesion difficulty. In speaking of the technique of the operation, he said that he reflected a large osteoplastic flap in almost all cases, using the chisel in preference to other instruments for work upon the bone. His paper was illustrated by 24 cases (with 31 operations) of which six had died. Of the six deaths not one was attributable to the operation but to the extremely bad condition of the patient at the time of the operation. Of the 18 recoveries 12 were successful and six were relieved.—Dr. W. CARTER thought that Mr. Harrisson's paper was most valuable. He mentioned the case of a woman, aged 30 years, who had been epileptic for 12 years. The intervals between the attacks became shorter and shorter till at length she passed into the status epilepticus. After consultation it was decided to operate. On the day preceding the consultation there had been 80 seizures, all medicines having been omitted for a day in order that everyone might see her as she was when uninfluenced by drugs. The only localising indications were slight drooping of the right eyelid and a reported commencement of the attacks in the left foot. Dr. William Alexander removed a piece of the calvarium four and a half inches long by two and a half inches broad from over the right Rolandic area, and as the dura mater looked healthy, though it bulged to the level of the scalp, it was agreed not to incise the membrane. The result was most satisfactory. The patient became conscious, intelligent, and bright; some time later she married and remained free from attacks for 12 years. The next, and so far as was known the only other, attack occurred at her husband's deathbed. Dr. Carter was present and had her removed to a small ward where she soon recovered consciousness and returned to her home. Nothing had been heard of her for three years. It was the belief of the entire hospital staff that she could not live many days and that it was due to the operation that she was able to live an active and useful life for many years.—Dr. STANSFIELD and Dr. J. H. ABRAM also spoke.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—A meeting of the Section of Medicine was held on Jan. 18th, Dr. Joseph M. Redmond, the President, being in the chair.—Dr. James Little read a paper on the Treatment of Gastric Ulcer. After a brief reference to the morbid anatomy, the causation, and the symptoms of the disease, he dwelt on the importance of rest in bed, on the value of fluid diet, and of various drugs for the relief or arrest of pain, hæmorrhage, and persistent vomiting. He also set forth the objections to uniting the stomach to the jejunum and said that an attempt ought to be made to treat the ulcer by medical means, though if it failed he readily invoked surgical

assistance.—Sir Charles Ball gave his experiences of some 40 cases of gastro-enterostomy, pointing out the success of this treatment in non-malignant ulceration.—Dr. James A. Lindsay (Belfast) said that the disease must be decidedly common in the North of Ireland, as the reports of the Royal Victoria Hospital in Belfast showed that in 1905 they had 110 cases, 70 in the previous year, and 69 in the year before that. As regards treatment, complete rest for a period of three weeks on an average was very important but that period might with advantage often be extended. Alkalies should also be employed and probably bismuth, as well as various remedies for the relief of pain, such as hot fomentations, poultices, flying blisters, opium, and morphine. In cases of recent hæmorrhage he put the patient for a short time on nutrient injections, but these were not usually well tolerated for a period of more than a week or ten days. An ice-bag should also be applied to the epigastrium. In other cases he had been in the habit of keeping the patient for at least three weeks on milk and strained soups or beef juices. In recent times there had been a considerable revolt in Germany against too strict a dietary. Leube allowed rice, sago, soft-boiled or raw eggs, calves' brains, and even boiled chicken and pigeon at the end of ten days and scraped raw meat by the seventeenth day. In view of German advocacy he had allowed whipped egg, animal jellies, and butter and cream from an early stage of these cases, and he had not yet seen a case where such liberty had led to mischief. He did not think very highly of nitrate of silver, nor was he inclined to favour the washing out of the stomach. The physician should recognise that in this field of practice surgical treatment had been of immense benefit and he should be careful not to postpone too long his appeal for assistance to a surgical colleague.—Dr. Arthur B. Mitchell (Belfast) said that gastric ulcer was a much more serious disease than was generally recognised and it was attended with a considerable mortality. An operation for gastric ulcer was a serious undertaking, but in competent hands the risk should not exceed 5 per cent.—in other words, it was no greater than the danger of perforation to which the patient was already exposed. "Exploratory" operation was, in his opinion, an unscientific proceeding. Operations should be undertaken with a deliberate object in view, but not for the purpose of opening the abdomen to see whether it ought to have been opened, for that was really what an exploratory operation generally meant. He had not yet had occasion to operate for the arrest of acute hæmorrhage and did not feel inclined to do so. For recurrent hæmorrhage gastro-jejunostomy was the treatment. Operation was not to be recommended for all cases of ulcer, but unquestionably it should be resorted to more frequently than it had been and before the health of the sufferer was undermined and the stomach so deformed or adherent as to require some elaborate and dangerous surgical procedure.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Feb. 1st, Dr. J. R. T. Conner, the President, being in the chair.—Dr. J. S. Risien Russell read a paper on the Significance of Paralysis of Cranial Nerves. The ways in which diagnosis, prognosis, and treatment were influenced by abnormal conditions of the cranial nerves were considered and it was contended that no more trustworthy sign of organic disease of the nervous system could be desired, although the statement required some qualification. The same degree of importance could not be attached to paralysis of every cranial nerve, for although little qualification was needed in so far as the motor nerves were concerned, sensory paralysis was, of course, compatible with functional affection of the nervous system. Even with this knowledge to guide them it was better for the medical practitioner to make the mistake of regarding as organic what was functional than to fail to recognise the real nature of an organic paralysis. Reference was made to the ways in which the true nature of sensory paralysis could be determined and to how the co-existence of motor paralysis influenced the diagnosis. How one organic disease of the nervous system could be differentiated from another by a study of the state of the cranial nerves was next considered, and numerous examples were quoted to show what an important part these nerves played in such problems. In dealing with the information to be derived from paralysis of these nerves as an aid in localisation he reminded his audience that although the nerves had their origin in the mesencephalon, and certain features of the paralysis might prove this to be the seat of the disease, gross lesions in other parts of the nervous system far removed from this region might also be responsible for their paralysis. He called attention to the different significance of paralysis of one nerve as compared with another and showed in what an important way the combinations in which cranial nerves were affected influenced the question of localisation. When discussing the influence which their paralysis had on prognosis he insisted on the importance of recognising that widely different opinions were justified according to a variety of different circumstances in which paralysis of even the same nerve was met with. Cases were quoted to show how such paralysis had been correctly regarded as of serious significance in some cases and how in others the gravity attached to the occurrence was wholly unjustified. Paralysis of cranial nerves influenced treatment in many important ways, but probably never more so than in the case of intracranial tumours, owing to the evidence that might be supplied as to the seat of the growth and notably as to whether it were extra- or intra-medullary, for these considerations had important bearings on the question of surgical intervention in these cases.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.—The annual meeting of this society was held on Jan. 10th, Mr. W. H. Date, the retiring President, being in the chair at first but later resigning it to Mr. R. Combe, the newly elected President for the present year.—Mr. A. C. Roper showed a very large Fibroid Uterus which he had removed and stated that the patient had given him much anxiety by developing an increased temperature evidently due to influenza shortly after the operation.—Dr. J. Delpratt Harris read a paper on Suppurative Diseases of the Ear. He spoke strongly of the necessity of general practitioners studying diseases of this organ, for it was under their care that all acute ailments of it were to be found. He instanced a case preserved in their museum where middle-ear disease went on to form an abscess in the temporo-sphenoidal lobe of the brain, and the patient only sought relief when septic meningitis occurred. He said that in regard to accuracy there was an enormous advantage in using Politzer's acoumeter, Sieble's pneumatic speculum, and tuning-forks in preference to the time-honoured watch. If the last be used the result ought to be expressed in the form of a vulgar fraction. Attention was drawn to the importance of observing the condition of Shrapnell's membrane and the posterior superior quadrant, with the speculum lighted by a constant source of artificial light in preference to the variable quality of daylight. Coloured diagrams were then shown of the following conditions: (1) perforative ulceration in which about two-thirds of the tympanic membrane had disappeared and in which Toynbee's artificial tympanum was surprisingly successful in restoring a working degree of hearing; (2) an abscess bursting through Shrapnell's membrane in which a pulsating bead of matter occurred and the phenomenon of nystagmus was present; (3) a case in which Politzerisation had been used until vesiculation of the tympanum had occurred to a marked extent; (4) a case of highly-injected tympanum resembling pannus of the cornea and which later showed a perforation in the posterior superior quadrant with protruding mucous membrane from the tympanic cavity, and on its retirement a bubble of pus which showed not only pulsatile movements but rhythmic increase and decrease in size with re-piratory movements; (5) a case illustrating the breaking-up into beads of the cone of light from retraction; (6) the dark line seen through the tympanum in serous otitis media; and (7) the appearance of a healing perforation. Nobel's pneumatic masseur was shown and cases in which its use was indicated were pointed out.

HUNTERIAN SOCIETY.—A meeting of this society was held on Jan. 23rd, Mr. John Poland, the President, being in the chair.—Mr. A. W. Mayo Robson delivered the second Hunterian lecture on Points in the Diagnosis and Treatment of Duodenal Ulcer. He said that recent knowledge on the subject of duodenal ulcer had been acquired by biopsy rather than by necropsy. According to post-mortem room statistics the relative frequency of gastric to duodenal ulcer was as 50 to 1. Operative experience, however, showed that the relative frequency was more nearly 10 to 1 than 50 to 1. Duodenal ulcer occurred more frequently in men than in women. The portion of the duodenum between the pylorus and Ochsner's sphincter—i.e., the part in which most ulcers occurred—had just as much to do with digestion as had the stomach. The

lower portion of the duodenum, on the other hand, ought to be classified with the jejunum. When a duodenal ulcer was sufficiently advanced to be recognised it was doubtful whether medical treatment was ever successful. The symptoms due to duodenal ulcer were more vague than were those due to gastric ulcer and were often attributed for a long time to acid dyspepsia, gastro-duodenal catarrh, gout, colitis, gastric ulcer, &c. Duodenal ulcer occurred usually in middle life but was more common in early life than was generally thought. The typical history was of pain coming on from two to four hours after a meal, when the stomach emptied itself. This pain was due to spasm of the pylorus, to the effect of the acid contents of the stomach passing over the ulcer, and to dragging on adhesions. It was relieved by ingestion of food because the pylorus closed and the acid secretion of the stomach was used up. The pain, which often woke the patient at night, varied from a dull ache to an agonising paroxysmal pain. It showed much less tendency to radiate than did the pain due to gastric ulcer. Heartburn and flatulence were common. Vomiting was often induced to relieve the pain. The appetite was good and nutrition might be fair even after a prolonged period of symptoms. There was often slight jaundice, digestion of fat was impaired, and there was intestinal catarrh, shown by the presence of indican in the urine. Sometimes there were no symptoms until the occurrence of perforation or severe hæmorrhage, but latency was not really common. Mr. Mayo Robson made brief remarks on some of the chief complications of duodenal ulcer—viz., hæmorrhage, perforation, anæmia, cicatricial stenosis, jaundice, abscess, and adhesions. Posterior gastro-jejunostomy was *the* treatment and it was effectual by itself in cases of severe hæmorrhage.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Jan. 18th, Dr. A. H. Bampton being in the chair.—Dr. W. Edgecombe read a paper on Metastatic Pancreatitis in Mumps.—Mr. R. Lawford Knaggs read a paper on Punctured Fractures of the Base of the Skull.—Dr. A. F. Dimmock gave a demonstration of the Uric Meter, designed for a rapid process for estimating uric acid in urine. A full account of this method will be found in THE LANCET of Jan. 5th, p. 14. Dr. Dimmock claimed that this rapid method proved sufficiently accurate for most clinical purposes. He had made a large number of estimations with it, controlled by estimations made by the more exact processes, and the close agreement between the two sets of results obtained had demonstrated that this method was useful for all ordinary clinical purposes where rapidity was desirable.—The following cases and specimens were shown:—Mr. W. Thompson: A specimen of Intussusception of the Vermiform Appendix removed by operation.—Mr. H. Littlewood: A case of Fracture of both Patellæ, wired on Dec. 13th, 1905.—Mr. H. Secker Walker: A case of Mules's Operation after Perforating Wound of the Eye.—Mr. J. F. Dobson: A case of Bilateral Congenital Dislocation of the Hip treated by Lorenz's Method. There had been an entirely successful result on one side and he proposed to repeat the operation on the other side. Dr. W. H. Maxwell Telling and Mr. Dobson: A case of Hydrocephalus treated by Ligature of both Internal Carotid Arteries with considerable improvement.—Dr. E. F. Trevelyan: A case of Graves's Disease in a man, aged 20 years, whose sister also suffered from the disease.—Dr. Telling: A case of Framboesioid Syphilis of the Face.—Cases and specimens were also shown by Dr. A. L. Whitehead, Dr. O. C. Gruner, Dr. J. B. Hellier, Dr. T. Wardrop Griffith, Dr. L. A. Rowden, Mr. R. G. Hann, Dr. T. Churton, and Mr. Knaggs.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on Jan. 23rd, Dr. E. H. L. Oliphant, the President, being in the chair.—Dr. G. Scott MacGregor showed a Dermoid Cyst of the Left Ovary and a small Cyst of the Right Ovary removed from a patient, aged 25 years.—Dr. R. Jardine showed: 1. A Fœtus with Malformation, the head being telescoped on the vertebral column. This specimen was referred to Dr. John Lindsay for further examination. 2. A Uterus with Pregnancy obtained post mortem from a patient who had died from pernicious vomiting. Blood was found in the urine.—The President gave his inaugural address. After a few preliminary remarks on medicine during the time of the Reformation he gave a sketch of medical science in Scotland about the time of the Union of 1707. He showed that the state of religious and social unrest of the end of the seventeenth century throughout Europe was not conducive to scientific progress; freedom of thought was impossible and medicine was to a large extent controlled by the teaching of the ancients. It was a dark age before the emancipation of the eighteenth century. The President illustrated the medical thought of the time by quotations from Pitcairn, Cheyne, Etmüller, and others, and by references to popular medicine, as in the prescription of Moncrief of Tippermalloch. He maintained throughout his paper that the state of medical knowledge in Scotland was not lower than in the rest of Europe.—On the motion of Dr. J. K. Kelly, a vote of thanks was passed to the President.

GLASGOW SOUTHERN MEDICAL SOCIETY.—A meeting of this society was held on Jan. 31st, Dr. T. Forrest, Vice-President, being in the chair.—Dr. W. B. Inglis Pollock read a paper on the Bacteriology of Conjunctivitis and gave a microscopic demonstration of the organisms found on the conjunctiva. Particular stress was laid upon the comparative ease of diagnosis and the great assistance rendered to prognosis and treatment by the bacteriological examination of the conjunctiva. Great care was required in the recognition of the gonococcus, as pseudo-gonococci were sometimes present, and several of these forms were demonstrated. Between 60 and 70 per cent. of all cases of ophthalmia neonatorum were due to the gonococcus, and the remainder to the Koch-Weeks bacillus, the pneumococcus, and others.—An interesting discussion followed, and in response to a question Dr. Pollock suggested that the great difference in severity of the gonorrhœal conjunctivitis in adults and in infants was due to an attenuation of the virus in the long-continued vaginitis of the mother. Buller's shield ought to be worn in the adult cases.

Reviews and Notices of Books.

On Means for the Prolongation of Life. By Sir HERMANN WEBER, M.D. Bonn, F.R.C.P. Lond., Consulting Physician to the German Hospital; the National Hospital for Consumption, Ventnor; and the Mount Vernon Hospital for Consumption. London: John Bale, Sons, and Danielsson, Limited. 1906. Pp. 104. Price 2*s.* 6*d.* net.

THE present book is the second and enlarged edition of a lecture delivered before the Royal College of Physicians of London on Dec. 3rd, 1903, upon which we commented in a leading article at the time.[1] Sir Hermann Weber gives certain rules the main objects of which are to promote physical well-being by temperance, moderation, and regular habits; indeed, the cultivation of these virtues forms the basis of his chief recommendations, and it is the discussion of them, their value, and their application in regard to the achievement of longevity that make up his lecture. He summarises his suggestions in eight general rules which are briefly as follows: to promote the action of the various organs of the body by regular exercises in the form of daily walks or rides, breathing exercises, gymnastic work, and periodical walking or climbing tours; to practise moderation in eating, drinking, and all bodily enjoyment; to live as much as possible in the open air and to secure efficient ventilation in the dwelling house; to increase the resisting power of the body, especially by endeavouring to counteract any inherited tendencies to disease; to go to bed early, to rise early, and to restrict the hours of sleep to six, seven, or exceptionally eight hours; to promote a healthy condition of the skin by daily baths or ablutions; to keep the mental faculties in regular occupation by appropriate work; and, lastly, to cultivate the virtues and to control the passions. These recommendations are of interest, since they are the outcome of a personal experience, enriched further by a study of a considerable number of old people observed during a very long medical practice; and although there is nothing novel about them, yet they emphasise the obvious and

[1] THE LANCET, Dec. 12th, 1903, p. 1666.

common-sense rules which all should follow who desire to live a healthy rational life, whether length of days be the object of desire or not. The objections often raised that such rules are irksome and that the restrictions entailed by them are tedious are met by the contention that a life of health, happiness, and activity so achieved is preferable to the mere sensual enjoyment of indulgence or excess with its train of retributive after-effects. Sir Hermann Weber quotes cases to illustrate the value of one of his recommendations—namely, the ordering of life so as to escape diseases known to have occurred in parents or near relatives, and there would be probably few who would question the wisdom of extra care and moderation for example in the matters of diet and alcoholic beverages by those with marked gouty family history, though even so it may be impossible to ward off all incidence of the dyscrasia as admitted by Sir Hermann Weber in his own personal history. Again, that regular employment both of body and mind is beneficial, and that more or less complete cessation at retirement from profession, business, or occupation is often the prelude to a general break-up is a familiar observation to most people, and Sir Hermann Weber does well to emphasise its lesson. At the same time, it should be borne in mind that in some such cases the retirement is the result rather than the cause of the enfeebled powers.

As we pointed out in our previous notice of this lecture, although we are in general agreement with his dictum that many people habitually indulge in too long hours of sleep, still it must be admitted that in this connexion there are great individual differences in the amount of sleep required for effectual recuperation and that probably in not a few cases the allowance of "six, seven, or exceptionally eight hours' sleep" allowed by Sir Hermann Weber would be insufficient. The lecture as a whole is readable, interesting, and worthy of perusal, since it suggests useful matter for consideration by those whose desire is efficiency in their work, as well as for those whose object is to achieve advanced years, and, moreover, the suggestions offered are in most cases rational and practical.

The Schott Methods of the Treatment of Chronic Diseases of the Heart, with an Account of the Nauheim Baths and of the Therapeutic Exercises. By W. BEZLY THORNE, M.D. St. And., M.R.C.P. Lond. Illustrated. Fifth edition. London: J. and A. Churchill. 1906. Pp. 140. Price 5*s*.

THE duty of the reviewer in considering a book which has reached the fifth edition is a light one, since the general purport of the work is well known and only the alterations and additions in the new issue have to be noticed. At one time it was considered doubtful whether aortic regurgitation was a suitable condition to be treated by means of baths and resistant exercises. Dr. Thorne now maintains that a weight of evidence, increasing year by year, points to aortic regurgitation as being greatly benefited by such therapeutic measures. He considers that this should be the case might be anticipated from the improvement these measures establish in the coronary circulation, thus inducing myocardial repair and restoring compensation. Dr. Thorne states that the proportion of cases in which no response can be elicited is small, probably less than 10 per cent.; in these instances clinical evidence points to irreparable obstruction of the coronary circulation. It would be interesting to obtain evidence from other observers in regard to the treatment of aortic regurgitation by mechanical means.

Dr. Thorne has observed several cases of Raynaud's disease which have been treated with baths and exercises, and speaks highly of the results which have been obtained. But he is of opinion that treatment with drugs is also desirable, salts of calcium being especially indicated. In cases of Graves's disease Dr. Thorne strongly advocates the Schott methods. He points out that the subjects of this affection not only can bear, but in many instances spontaneously ask for, baths of a lower temperature than generally rules in other cases. For complete relief two or three courses of treatment are required, as well as strict enforcement, in diet and hygiene, of all precautions which tend to obviate autotoxis—a condition which is becoming more and more widely recognised to be a prime cause of affections both of the nervous and of the circulatory systems.

We can cordially recommend Dr. Thorne's book to those who wish to obtain accurate information as to the manner of carrying out the Schott methods as well as the classes of morbid conditions for which they are suitable.

Surgical Treatment of Chronic Suppuration of the Middle Ear and Mastoid. By SEYMOUR OPPENHEIMER, M.D., Otologist and Laryngologist to Gouverneur Hospital and to Mount Sinai Dispensary, New York; Fellow of the American Laryngological, Rhinological, and Otological Society, &c. Illustrated by 46 half-tone plates, containing 64 figures and 27 key plates, all engraved from original drawings prepared from special dissections under the supervision of the author. London: Rebman, Limited. 1906. Pp. 425. Price 27*s*. 6*d*. net.

Dr. Oppenheimer has produced a large book on a comparatively small subject but it has the great merit of being profusely and beautifully illustrated, each illustration being accompanied by a sketch which emphasises the particular points to which the author wishes to direct attention. The preliminary preparation of the patient for operation is first considerd, but in this it seems to us that a too ideal perfection is aimed at. The next section deals with the treatment of the mucosa and mucoperiosteum of the tympanic cavity and amongst other things the removal and treatment of polypi are considered. The author then proceeds to describe the treatment of the ossicles and we must say that he appears to have a tendency to approach the surgery of the part too much in the manner of 20 years ago, when general surgical principles were not considered to be applicable to diseases of the ear. On Plate 15 is a figure in which is depicted the division of the suspensory ligament of the incus by a small angular knife. Such a procedure militates seriously against the value of the book. The remainder of the volume is occupied by a description of the operations upon the mastoid process and here again the illustrations are most excellent but if a fault is to be found with them it is that they are drawn from anatomical preparations of the temporal bone alone and are therefore relatively of but small assistance to the student and to the inexperienced operator. As a library volume Dr. Oppenheimer's book will find a place on the shelves of many and will be of considerable use as a work of reference.

A Handbook of the Diseases of the Eye and their Treatment. By HENRY R. SWANZY, A.M., M.D. Dub., President of the Royal College of Surgeons in Ireland, &c.; and LOUIS WERNER, M.B. Dub., F.R.C.S. Irel., Sen. Mod. University of Dublin; Ophthalmic Surgeon to the Mater Misericordiæ Hospital, &c. Ninth edition. London: H. K. Lewis. 1907. Pp. 744. Price 12*s*. 6*d*.

IT would be a work of supererogation to attempt to enumerate the excellencies of Swanzy's well-known "Handbook of Diseases of the Eye." We will therefore confine ourselves to some general criticisms. The ninth edition differs from its predecessors chiefly in the fact that Dr. Louis Werner's name appears for the first time upon the title page as part author. The book has grown considerably in size, undergoing in this respect the usual evolution of the successful manual. The incorporation of new matter in a standard work is a feat of exceptional difficulty; the

resultant edifice generally shows traces of its composite architecture, if, indeed, it escapes the manifestation of pretensions at total variance with the original design. We do not think that the utility of Swanzy's "Handbook of Diseases of the Eye" has been seriously impaired by the process of renovation but there are indications that the authors require a word of warning. We see obvious signs that the work is losing its character of a student's manual and is becoming a text-book. Just as the transformation of an early Victorian mansion into a modern residence is unsatisfactory, so is the evolution of a text-book from a manual. The difficulty is not to be overcome by the use of asterisks to indicate the paragraphs which should be left for a second reading. The device is irritating to the reader and is, in our opinion, futile.

Swanzy's Handbook has hitherto been essentially a student's book. In the present edition it has been improved in this respect by a fuller treatment of the optical principles which lie at the root of ophthalmology. We consider that its value has been decreased by the inclusion of such rare conditions as conjunctivitis petrificans, nodular keratitis, and so on, the mention of which merely serves to confuse the student's mind.

Regulations, the Army Medical Service, 1906. London: Printed for His Majesty's Stationery Office by Harrison and Sons. Pp. 174. Price 6*d*.

THIS is one of the army official text-books which are issued at stated intervals. It is so planned that it can be easily referred to and it is well arranged and well indexed. From it the public can learn the arrangements which are in force for the medical treatment and nursing of the army and of the wives and children of our soldiers in times of peace and war. Fathers who are thinking of bringing up their sons to be officers of the Royal Army Medical Corps can learn from these pages the great variety of duties which will be expected from them and they will be able to form an opinion of the suitability of their sons for such a position in life.

The book is, of course, of primary importance to the officers and nursing sisters now serving and it is, so far as they are concerned, comprehensive. In the instructions for the physical examination of candidates for commissions in the army we are glad to see that the paragraph relating to varicocele and varicose veins lays down that a candidate must not suffer from "a severe degree" of either of these conditions and that a "severe varicocele is properly defined." This, we hope, will lead to a reduction in the operations to which candidates for commissions have hitherto been subjected. We have known officers who were suffering from severe varicose veins on their admission to the Indian army some 25 years ago and who have gone through this respectable amount of service without any real inconvenience either to themselves or to the public weal.

These regulations are, of course, the accumulated wisdom of years of experience. We need not say how necessary the manual is to every officer and nursing sister; they are, of course, obliged to provide themselves with copies.

LIBRARY TABLE.

The Queen's Poor: Life as They find it in Town and Country. By M. LOANE. New and cheaper edition. London: Edward Arnold. 1906. Pp. 312. Price 3*s*. 6*d*.—This book contains some of the experiences of one of the Queen's nurses. It is a charming work, full of good stories, and shows us womankind among the poor in a most pleasing light. The book abounds with pathetic stories and we venture to think that no one could read the one entitled "For Forty Years" without being moved in more than an ordinary way. The tale of "A Drunkard's Wife" who kept a box and in it every day dropped a penny for works of charity "because God has been so good to me" and who said to the nurse, "Though my body is here my soul seems to be absolutely free. The older I grow, the closer and more perfect my communion with God becomes," is one which should stir many who are grumbling at life's load to more patience and thankfulness. The greater part of the chapters entitled "Husband and Wife among the Poor" and "The Religion of the Respectable Poor" appeared in the *Contemporary Review*. Some other paragraphs have been reprinted from the author's stray papers in *Nursing Notes*, the *British Journal of Nursing*, and the *Queen's Nurses' Magazine*.

Refraction of the Eye, its Diagnosis, and the Correction of its Errors, with a Chapter on the Use of Prisms. By A. STANFORD MORTON, M.B. Edin., F.R.C.S. Eng., Surgeon to the Royal London Ophthalmic Hospital; Ophthalmic Surgeon to the Great Northern Central and the Italian Hospitals. Seventh edition. London: H. K. Lewis. 1906. Pp. 96. Price 3*s*. 6*d*.—Mr. Morton's brochure on the refraction of the eye is one of the best of the many elementary booklets upon this subject. That it is widely appreciated by students is shown by it having reached the dignity of a seventh edition. It is essentially a practical guide and is distinguished in this respect by the lucidity of the descriptions and thorough trustworthiness. We think that too little stress is laid upon the dangers of subjective testing of astigmatism with cylinders (without retinoscopy), especially as the book is intended for beginners. The theoretical foundations of the subject are inadequately treated, for unless they are grasped the practitioner lacks that true insight which makes him an efficient workman. The intelligent student wants to know *why* Snellen's test types ought to be read by anyone with average vision at the distance for which they are marked. A short chapter on the use of prisms has been added in this edition.

Retinoscopy (or Shadow Test) in the Determination of Refraction at One Meter Distance with the Plane Mirror. By JAMES THORINGTON, A.M., M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic, &c. Fifth edition with 54 illustrations, ten of which are coloured. London: Rebman, Limited. 1906. Pp. 67. Price 4*s*. 6*d*. net.—This very lucid practical guide to retinoscopy deserves the success which it has attained. The student of ophthalmology will scarcely succeed in finding a better description of the method, what he will see, and how to interpret his findings. Only the baldest outlines of the theory of retinoscopy are vouchsafed to him and if, as is to be desired, he wishes to understand the underlying optical principles he will have to seek them elsewhere. Dr. Thorington's method of approaching the light to the mirror when the point of reversal is nearly reached is not in common use in this country and the student will do well to ignore it until he has gained some facility with the ordinary method. It involves some modification in the apparatus, especially the shading of the light, and this increases the difficulties of the test. It is doubtful if the slightly increased accuracy warrants the trouble. The luminous retinoscope would be useful were it not for the inconvenience attending the employment of electric lamps of low voltage. The author's axonometer is also a useful device for marking the axis in regular astigmatism

Auscultation and Percussion, together with the Other Methods of Physical Examination of the Chest. By SAMUEL J. GEE, M.D., F.R.C.P. Lond., Honorary Physician to H.R.H. the Prince of Wales, &c. Fifth edition. London: Smith, Elder, and Co. 1906. Pp. 325. Price 6*s*.—It is difficult to realise that the last edition of this well-known little book appeared in 1893. Little if any progress has been made in our means of examining the chest in the last

ten or 15 years, if we omit the application of x rays to diagnosis, and this omission is intentionally made by Dr. Gee, as he tells us in the preface. Probably this course was wise, as only a specially trained observer can rightly interpret the enigmas of a skiagram, and even he is sadly liable to err. Consequently, Dr. Gee has been able to avoid the tendency of most authors to continual expansion of their works as editions multiply; the present edition is a page shorter than the fourth, its predecessor, and we note in perusing it more omissions than additions to the matter. Taken altogether the changes are inconsiderable; we recognise an old friend at once, characterised by that clearness, conciseness, and dogmatism which formed its features in days gone by. In one small detail we were disappointed; we had expected some allusion to the method of auscultatory percussion which has been much lauded by some observers. From its omission we may infer that Dr. Gee does not attach much value to the procedure and in such a view we are inclined to concur; otherwise we have nothing to add to our comments on the fourth edition. We wish for this little volume a continuance of its well-merited success and we have little fear of our hopes being falsified. It will remain at once the standard authority in the sphere with which it deals and a striking illustration of the methods of a distinguished teacher of clinical medicine.

JOURNALS AND MAGAZINES.

Edinburgh Medical Journal.—In the January number Dr. William J. Mayo discusses the principles underlying the Surgery of the Stomach and Viscera, as brought out by recent researches on the physiology and anatomy of the stomach and on the relation of the peritoneum to septic infection. Professor K. G. Lennander of Upsala records a case of Volvulus of the Small Intestine at a Meckel's diverticulum and discusses the performance of gastrostomy for the relief of paralysis of the gut. A description of a case of Darier's disease, with some good illustrations, is given by Dr. W. Allan Jamieson, and Dr. John Hay writes of Paroxysmal Tachycardia which he attributes to abnormal production of stimuli in the auriculo-ventricular bundle of fibres.

Bristol Medico-Chirurgical Journal.—The December number opens with a paper by Mr. James Taylor on X Ray Therapeutics, in which he treats of the employment of this method in malignant disease, leukæmia, diseases of the hair, and so forth. The Long Fox lecture for 1906, delivered by Dr. Alfred J. Harrison, is devoted to forms of toxic dermatitis, such as that caused by poisonous plants. Mr. Charles A. Morton writes of preservation of the limb in cases of sarcoma of the bone; and Dr. J. M. Fortescue-Brickdale gives an account of recent views as to protein-metabolism.

Medical Chronicle.—The December number contains a paper by the late Dr. Thomas Harris narrating a case of pleural effusion in which large quantities of cholesterin crystals were present in a more or less hæmorrhagic exudate. A further instalment of Dr. James McIlraith's dissertation on Convulsions in Infancy and Childhood deals with such exciting causes as abnormalities of labour, cerebral palsies, congenital syphilis, and meningitis. The author doubts whether "in children with a healthy nervous system teething is ever a cause of convulsions."

Birmingham Medical Review.—In a paper in the December issue of this magazine dealing with spasmodic asthma Dr. Robert M. Simon upholds the view that the disease is due to spasmodic contraction of the bronchial muscles, attacks being excited by irritants such as smells, indigestible food, and change of air. Mr. J. Jameson Evans narrates some interesting cases of foreign bodies lodged in the eye and emphasises the importance of keeping the patients under observation for considerable periods of time. The printing of this magazine leaves much to be desired.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Feb. 7th, 1829.

UNDER predisposition to cerebral affection, mental or spasmodic, improvident bleedings and purgings prove alike detrimental to the system; for, by deranging the circulation of the brain, they foster disposition to organic affection—fatal, not unoften, to life itself. We ought not to bleed at all without the most urgent necessity for it, bearing in mind its interference with the great business of circulation. Regarding physic, our object must be to establish a regularity and sufficiency of feculent evacuation daily, by alterative, rather than forced and drastic measures, correcting, at the same time, the secretions of the stomach and liver, with a view to the perfection of digestion. Hence I would suggest the value of bran bread (if prepared from wheaten meal, with the whole of its bran in it,) to the predisposed to cerebral affection, highly prone, as they generally are, to constipation. I speak with confidence of its disposition to keep up feculent evacuation, as correcting of the secretions; the *pilul. hydrarg.*, in combination with *antimon. tart.*, will be found to prove eminently efficacious; regard being had, at the same time, to keep the bowels soluble, by some approved saline aperient, to prevent the mercury saturating the system. I advert, finally, to the disposition of the blood to be venous, rather than of arterial character, (opposed, doubtless, to the well-being of the brain,) fostered not a little by our stimulant living, and refined domestic habits, which consign us by day, as well as by night, to a most obnoxious atmosphere. In an essay, recently, on phthisis pulmonalis, I have demonstrated, it is presumed, how essential is the purity of the surrounding medium to the circulation, and consequently, well-being of the lungs. That the brain, no less than lungs, suffers under a deteriorated surrounding atmosphere, syncope amply testifies. But to render the blood to circulate throughout the minuter ramifications of the brain, it must be divested of its venous property, i.e. be purely arterial; and this can only be effected by means of the oxygen of the surrounding medium. A fertile source of headach, it would seem, little imagined, is to be sought for in the surrounding atmosphere. Such the state of our habitations, of association, and repose, which to ventilate, by night especially, would be looked upon as a species of temerity, bordering, I had almost said, upon insanity!

As the surrounding medium becomes deprived of its oxygen, we experience, in proportion, a diminution of those faculties which derive their immediate influence from the brain.

The predisposed, then, to cerebral affection, whether in the shape of insanity, epilepsy, palsy, or apoplexy, ought, by night and by day, to breathe the very purest atmosphere, as well as in a temperature greatly under that we are in the habit of indulging, in more refined life. I speak from my own personal experience, having overcome a predisposition to apoplexy in myself, which the late Dr. Gregory, of Edinburgh, of acknowledged eminence in his profession, declared to be irremediable. The predisposed, also, should guard against vehement or distressing passions, for these commit serious ravages upon the brain, first, by deranging its circulation, and eventually, its organisation. I take leave, seriously, in conclusion, to awaken the attention of my professional brethren, to the momentous importance of a due regard to functional derangement, seeing that the organic affections of vital parts but "mock our toil," and set both regimen and medicine at defiance.[1]

[1] Extract from exposition on the predisposition to, and prevention of, insanity, by Dr. W. Horsley, dated North Shields, December, 1828.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 9, 1907.

Human and Animal Tuberculosis.

FEW modern questions of public health are of greater importance than the investigation of the risk which animal tuberculosis entails on the community. The existence of this risk and the need for taking steps to avoid it have received more or less general acceptance ever since the infectivity and bacillary origin of tuberculosis became known. The practical application of preventive measures, however, has, at any rate in the United Kingdom, been beset with serious difficulties. The sanitarian is met with the fact that the disease is very widely prevalent among milch cows, that it is also frequently met with in cattle, pigs, and other animals used for meat food, and that this prevalence is probably not decreasing. The trading and commercial interests concerned are enormous, while in the existing state of public health law and administration it is impossible to adopt anything like method or uniformity in attempting to protect the public against tuberculous milk or meat. And a further question in one form or another has always to be met. Is the risk from tuberculous food considerable in itself, and if so how does it compare in degree with the opportunities of spread of tuberculosis which are afforded by tuberculous sputum, dust, and other means by which the disease is spread from man to man?

In its report of 1895 the Royal Commission on Tuberculosis, of which the late Sir GEORGE BUCHANAN was chairman, brought together material then available for answering this question. The evidence that animals of one variety could acquire tuberculosis from tuberculous matter derived from animals of another species, by feeding or by inoculation, seemed to the Commissioners unmistakeable, and they drew special attention to the exceptional virulence, in the cases of different test animals, of milk derived from cows with tuberculous udders. They did not hesitate to apply these observations to man and to infer that not only such milk but any tuberculous matter of animal origin taken in food must be regarded as causing risk of tuberculosis to the person receiving it. The Commissioners' findings were made the starting point of the inquiries of the subsequent Royal Commission, with Sir HERBERT MAXWELL as chairman, which collected evidence on the administrative questions concerned and reported in 1898. A few of the recommendations of Sir HERBERT MAXWELL'S Commission, such as its working rules for judgment of tuberculous carcasses, have to a large extent governed subsequent practice in this country. But on the wider issues raised by its report—State encouragement to stock owners to eliminate tuberculosis from their herds, compulsory notification of udder disease, and slaughter-house and meat inspection reforms—little progress has been made. The declaration of Professor R. KOCH at the British Congress on Tuberculosis of 1901 that he considered bovine and human tuberculosis to be quite distinct profoundly affected the position. He asserted as a result of his experiments and inquiries that the bacillus of human tuberculosis was unable to give rise to tuberculosis in the ox and that bovine tuberculosis could not be the cause of tuberculosis in man. It was pointed out at the time by many, ourselves included, that his conclusions were far too sweeping to be justified by the facts reported and hardly warranted relaxation of efforts to deal with animal tuberculosis in the interest of public health. But Professor KOCH'S views naturally received the widest publicity in this country and the Government elected to take the safe course of returning the whole question to the crucible. The subject of the inter-relation of human and animal tuberculosis was referred in 1901 to a new Royal Commission, the second report of which is now published and is reviewed elsewhere in our present issue.

A striking feature of this report is the evidence which it gives of the magnitude and thoroughness of the inquiry initiated by the late Sir MICHAEL FOSTER and his colleagues, Dr. G. SIMS WOODHEAD, Dr. SIDNEY H. C. MARTIN, Sir JOHN MACFADYEAN, and Sir RUBERT W. BOYCE, and carried out by them with the aid of Dr. E. J. STEEGMANN, the secretary of the Commission, and an investigatory staff which includes Dr. LOUIS COBBETT, Dr. A. S. GRIFFITH, Dr. ARTHUR EASTWOOD, Dr. F. GRIFFITH, Mr. H. HAMMOND SMITH, and other workers. In passing we must not omit a few words of tribute to the generosity and the public spirit which led Sir JAMES BLYTH to come to the assistance of the Government and the Commission in their investigations, or to draw attention to the completeness of the arrangements which were consequently made by the Commission on his estate at Stansted to investigate the strains of human and bovine tuberculosis at separate farms, in separate laboratories, and otherwise to eliminate opportunities of error and accidental infection. The conclusions which the Commission's researches now enable it to draw are of far-reaching importance. As might have been anticipated from its own brief first report, and from the recent work of foreign observers, including the German Commission of which Professor KOCH was a member, the facts point to deductions which are directly opposed to Professor KOCH'S propositions of 1901. Bovine tuberculosis, typical in all respects, can be produced in the bovine animals by certain strains of tuberculous material of human origin; the matter has been placed beyond any doubt. Marked differences are met with between bovine tuberculosis and certain strains of human tuberculosis in respect of their infective ability to certain lower animals (in particular to calves); but practically speaking the difference, where it exists, is always in one direction; whatever the animal in question the tubercle of bovine origin has the greater virulence. The experiments have extended to anthropoid apes which have been found readily susceptible to bovine infection. No reason has been shown for inferring that man alone possesses a specially lessened susceptibility to tuberculosis of bovine origin. The Commission, however, goes much farther than this. Side by side with the extensive tests of virulence of the different strains of human and bovine tuberculosis

with which they experimented they have made detailed observations of the bacilli concerned in regard to their morphology, cultural characteristics, and variations. Certain characteristics of the bovine bacilli are clearly established which contrast with those of bacilli met with in the majority of strains of human tuberculosis. But in a minority of cases—as many as 14 human strains out of 60—the bacilli of the human tuberculosis possessed the characteristics of the bovine variety. These were the strains which produced typical bovine tuberculosis when introduced into the bovine animal. Their virulence, tested in a variety of other ways, proved to be practically the same as that possessed by strains of naturally occurring bovine tuberculosis. The human material from which these 14 strains were derived comprised in one case sputum, in three cases cervical glands removed by operation, and in ten cases lesions obtained from primary abdominal tuberculosis. The Commission has no hesitation in referring these cases to infection with bovine material, most probably cow's milk. As indicated already, the majority of strains of human tuberculosis were associated with bacilli which could broadly be classified as of "human" type and proved as a class to be much less virulent than the strains of bovine origin. The Commission does not, however, conclude that strains of "human" type necessarily or invariably denote human infection. It draws attention to evidence which it has obtained with respect to strains of tuberculosis which appear to be on the borderland between the "human" and the "bovine" types in regard to the character of the bacilli, or to the virulence of the strain to experimental animals, or to both. In certain "passage" experiments it has succeeded in ultimately producing bovine tuberculosis by strains of human tuberculosis which had the characteristics of the human type, and the possibility that in man tuberculous lesions containing bacilli of the human type may nevertheless have originated from an original bovine infection cannot be ignored. It is impossible to deal with these and other questions discussed in the report in the compass of an article, and in regard to several of these the Commission is continuing its work and reserves judgment. But here we are concerned to point out that this second report has given, in no uncertain terms, the main answer which public health administration required. We are forced to conclude that it is more than ever necessary to take active steps to minimise the risk which the public incur from tuberculous food and especially from tuberculous milk. We cannot be content to tell the public to boil or to sterilise all its milk; we know from experience the limited utility of such advice. We want milk free from tuberculous infection at its source, and in this matter Government action is called for. Already the departments concerned have at hand not only the accumulated experience of their medical advisers at the Local Government Board, and the assured coöperation of the whole public health service, but also the detailed inquiries and administrative recommendations of the Commission of 1898. It should be remembered also that administrative proposals which could be considered somewhat speculative ten years ago have now in many cases been put to practical test abroad—notably in Denmark, Holland, and in the United States—where prevention of animal tuberculosis is undertaken by the Governments concerned on systematic lines, with results satisfactory not only to the public health but also to stock owners and traders. In these countries the success obtained has depended on a central expert organisation carrying out its administrative duties in the light of continued research at State laboratories. It is not the smallest part of the many debts which the country owes to Sir MICHAEL FOSTER that he and his colleagues have shown what can be done in this direction by British men of science when the opportunity is afforded.

Clifford *v.* Timms: The Meaning of Professional Misconduct in a Partnership Deed.

Mr. Justice WARRINGTON gave judgment on Jan. 26th in a case of considerable interest to dentists and to the medical profession also. Mr. ISIDORE CLIFFORD, the plaintiff, and the defendant, Mr. SAMUEL TIMMS, entered into partnership as dentists under articles dated Oct. 2nd, 1899, which contained the following provision: "If either partner shall at any time during the continuance of the partnership be guilty of professional misconduct or of any act which is calculated to bring discredit upon or injure the other partner or the partnership business, the other partner shall be at liberty to give notice in writing of his intention to determine the partnership and thereupon the partnership shall be dissolved and wound up under the provision of these presents in the same manner as if the offending partner had died on the day of the date of such notice." On May 24th, 1906, the General Medical Council found upon a report of the Dental Committee before it, that certain persons whose case was before it, and who included the plaintiff, had been guilty of conduct which was infamous in a professional respect and directed the Registrar to remove his name and the names of those included with him in the report from the Dentists Register.[1] The report of the Dental Committee upon which the General Medical Council acted set out that the plaintiff with the other persons named in it had joined in forming, and were the principal shareholders and only directors of, a limited company named "The American Dental Institute, Limited," carrying on dental practice at various places and employing unregistered assistants who used the name of doctor, that the company advertised systematically, and that in the *Review of Reviews* an "interview" with one of the directors had appeared containing "scandalous and highly objectionable remarks with regard to English dentists and dentistry." It also set out that the accused practitioners had undertaken that the company should be dissolved and that their objectionable practices should cease, undertakings which their counsel before the General Medical Council in substance repeated. On June 28th, 1906, the defendant gave notice to the plaintiff in these terms: "Whereas you have been guilty of professional misconduct within the meaning of Clause 23 of the deed of partnership entered into between us and dated Oct. 29th, 1899, I hereby give you notice of my intention

[1] THE LANCET, June 2nd, 1906, p. 1567.

to determine the partnership created by the said deed," and this notice was repeated later after certain negotiations between the parties had fallen through. The plaintiff denied that his conduct fell within the provisions of the clause quoted above, enabling the partners to put an end to the partnership, and brought an action claiming a declaration that the notice given was invalid and that the partnership still subsisted and an injunction to restrain the defendant from acting upon the notice. In his judgment, which he delivered after taking time to consider it, Mr. Justice WARRINGTON held that the plaintiff was entitled to succeed and granted him the declaration and injunction which he asked for with costs.

The decision is an important one and as it seems hardly likely that it will remain uncontested it is not necessary or desirable to discuss it at length. With regard, however, to the grounds upon which it was given it may be stated that counsel for the defendant claimed that the order of the General Medical Council together with the finding of the Dental Committee was admissible as evidence upon the issues raised, and also that they constituted conclusive evidence that the plaintiff had been guilty of "conduct infamous or disgraceful in a professional respect," and that, that being so, the court must hold that he had been guilty of "professional misconduct" within the meaning of the articles. Upon the question of admissibility the learned judge appears to have been against the defendant so far as the order was concerned but the report of the committee was admitted by arrangement and the decision as to both does not appear to have been of a definite nature. That the order was not proof of professional misconduct within the meaning of the articles was a more important feature in his lordship's judgment from a medical point of view, for he drew a distinction between "professional misconduct" and "conduct infamous or disgraceful in a professional respect." To quote from the *Times* report of his judgment: "It seemed to him that the expression with which he had to deal was not only in form but in substance a different one. Without attempting to give an exclusive definition of 'professional misconduct' he thought it was clear that it had a more restricted meaning than the statutory expression, which latter might well include, and would on the evidence of the President of the Council (who had been called as a witness by the defendant) be held by the Council to include, certain breaches of professional etiquette which could not in his lordship's judgment be properly described as professional misconduct. 'Misconduct in the exercise of his profession,' his lordship thought, would fairly express the meaning of 'professional misconduct,' whereas the statutory phrase would include that misconduct and also misconduct as a member of the profession, which would be a different thing." Other passages in his lordship's judgment to which attention may be called owing to their importance if they are to be taken as representing the correct judicial estimate of professional conduct are as follows: "The employment of unregistered assistants was not, so far as he could see, contrary to any rule of professional conduct." "Advertising was admittedly allowed in the profession, and he failed to see any professional misconduct" in the publication of such pamphlets as had been placed before him. With regard to the other words occurring in the articles of partnership, his lordship said that "the order of May 24th would not necessarily bring discredit upon the defendant nor injure him or the business, but if it did his lordship held that the defendant had not by any proper evidence proved that the plaintiff had been guilty of any act calculated to have that effect."

If Mr. Justice WARRINGTON is right in questioning the admissibility of the General Medical Council's order and of the report upon which it was based cases of the kind described must be brought into court with detailed evidence as to the acts alleged to constitute professional misconduct, a course which will entail considerable expense to the litigants. The parties, in short, will have to bring into court all the evidence already laid before the committee of the General Medical Council. Moreover, there will be a difference as to the precise point to be established if Mr. Justice WARRINGTON'S distinction as to the meaning of "professional misconduct" and his views upon the subject generally stand good. If, however, his judgment is upheld or is not appealed against it will be easy for medical men and dentists to add to such a sentence in their partnership articles as that quoted above, after "professional misconduct" the words "or of conduct held to be infamous or disgraceful in a professional respect by the General Medical Council."

Professor Mendeléeff.

THREE years ago a very remarkable essay entitled "A Chemical Conception of the Ether" came into our hands and in it occurred the following sentence: "When I applied the periodic law to the analogues of boron, aluminium, and silicon I was 33 years younger than now, and I was perfectly confident that sooner or later my prediction would be fulfilled. Now I see less clearly and my confidence is not so great. Then I risked nothing, now I do. This required some courage which I acquired when I saw the phenomenon of radio-activity. I then saw that I must not delay, that perhaps my imperfect thoughts might lead some men to a surer path than that which was opened to my enfeebled vision. ..... I think I have not many years for delay. ....." The writer was the great Russian chemist and philosopher DMITRI IVANOVITCH MENDELÉEFF, whose death at the age of 73 years was announced early in the week. With him has passed away one of the foremost exponents of the principles of chemical science. His failing powers seemed to be borne in upon him, for in the words which we have quoted, though written three years ago, he appeared to foreshadow the coming of his death in the near future and to justify haste to give to the world of science his ideas of the constitution of matter in the new light of radio-active phenomena; and the words with which he practically closed his brilliant career may some day come to pass. No one seems seriously to have contested MENDELÉEFF'S suggestion that after all the ether is a simple body or element incapable of entering into combination or reaction with other elements or compounds, although capable of penetrating their substance, just as helion, argon, and their analogues are

soluble in water and other liquids. According to this view the ether is in reality a chemical element lighter than hydrogen, and radio-activity is due to the emission of this ether which is capable of exciting the luminous vibrations. Whether such a view will stand the test of further knowledge remains to be seen. Any conception of the division of atoms was, MENDELÉEFF thought, contrary to scientific teaching until someone had demonstrated either the actual transformation of ordinary matter into ether or the reverse, or else the transformation of one element into another. The division of atoms into minute electrons MENDELÉEFF regarded as amounting after all to a separation or emission of the generally recognised and all-permeating ether. In connexion with this view it is interesting to recall now that the statement that the production of helion from radium had established the fact of the gradual evolution of one element into others is by no means universally accepted. So great a physicist as Lord KELVIN has confessed himself sceptical on the point, for he has suggested that radium contains helion much in the same way as does the mineral clevite which yields that gas when heated in vacuo. This view of Lord KELVIN seems to us to bear a close analogy to MENDELÉEFF'S conception of the "all-permeating ether," while Sir WILLIAM CROOKES has admitted that "so little is known about this subject that it is the duty of every worker to throw his knowledge into the common pot to be boiled down and assimilated into something useful."

The periodic law was MENDELÉEFF'S greatest realisation, and whatever fresh meanings this law may have in the future it will ever stand out as one of the most brilliant examples of successfully wresting from Nature a profound secret. It was in 1869 that MENDELÉEFF first demonstrated the periodic dependence of the properties of the elements upon their atomic weights. Guided by this system he was able to predict both the existence of several unknown elements and also their physical and chemical properties in a free and combined state. It is now a matter of history that the three elements the existence of which was so clearly foreshadowed by MENDELÉEFF were subsequently discovered and named gallium, scandium, and germanium by their respective discoverers, LECOQ DE BOISBAUDRAN, NILSON, and WINKLER. These predictions proving true confirmed the periodic system of the elements, and it was soon realised that an absolute law had been discovered. Other gaps have since been filled and places have been found in the scheme for the comparatively recently discovered group of singularly inert elements—argon, helion, and their companions. In a lecture delivered at the Royal Institution of Great Britain on May 31st, 1889, MENDELÉEFF frankly owned that the speculations of the English chemist NEWLANDS in 1865 had made an approach to the periodic law and had discovered its germs. "Fruit," said MENDELÉEFF, "was ripening," and he saw clearly that NEWLANDS, amongst others, "stood foremost in the way towards the discovery of the periodic law; they merely wanted the boldness necessary to place the whole question at such a height that its reflection on the facts could be clearly seen." MENDELÉEFF himself was the man who possessed that boldness, as well as a strong mathematical insight and a wonderful power of correlating facts. By these means he raised the periodic law to the position of a generalisation and it has given to chemistry an exactitude which few other sciences have, so far, received. The moment the periodic law was recognised a revision of many facts was demanded and so the chemistry of the elements was placed on a more exact foundation than before.

The periodic law threw great light on the laws of combination and fresh compounds were indicated and obtained. But apparent as the law of periodicity is in the properties of the elements a still wider application came in sight when it was shown that a similar periodicity was manifested in certain hydrocarbon radicles. As MENDELÉEFF, however, pointed out, in the periods of the hydrocarbon radicles there is a decrease of mass as we pass from the representatives of the first group to the next, while in the periods of the elements the mass increases during the progression. Still the observations are of the greatest interest in that they indicate a cycle of property or function even in organic compounds. In short, MENDELEEFF'S work has been of the greatest service in elucidating the principles and facts of chemical science. It has stimulated research in all fields with the most fruitful results, it has vastly added to our methods of observation, and it has given us a real "glimpse into the nature of things," so that men were able to predict with success that which Nature has fashioned, yet which they had not handled, and to make a shrewd guess as to the manner of the birth and genealogy of the elements. Medicine mourns the loss of this great investigator.

Annotations.

"Ne quid nimis."

FROST-BITE AND WOLF-BITE.

"ITALIANS can stand an Arctic temperature within their own confines," writes a contributor from Florence, "as they can stand it in high latitudes—witness the retreat of the grand army from Moscow in 1813 when, by the testimony of Baron Larrey, Napoleon's surgeon-general, the contingent that best withstood the frost, as well as the fatigue and the exceptional privations, were the 10,000 Neapolitans under Murat. Another and a more formidable condition, however, than that of 24° C. below zero is now being faced in Italy, from Domodossola at the southern end of the Simplon Tunnel to the Abruzzi and Calabria. Frost-bite and death from congelation have numbered their victims, though, thanks to that abstinence from alcohol which Baron Larrey admired among Murat's Neapolitans, the cases of either have been fewer than the Siberian weather would seem to warrant. But there is a danger more gruesome than the atmospheric, particularly on the Apennines—a danger fully realised in many a

'Rugosus frigore pagus,'

where, as the night closes in

'The long howling of the wolves
Is heard among the snow.'

as Macaulay sings. Let the following tragic incident be cited in illustration of others hardly less 'impressionanti.' A soldier of the line, on a few days' leave to visit his parents, alighted on the evening of Jan. 25th from the train

plying between Aquila and Sora, and proceeded on foot through deep snow to his native village of Alviso, there to receive the parental welcome. Dusk had set in and at a turn of the well-nigh obliterated road he was assailed by famished wolves. On the next day his family, uneasy at his not having turned up, went out in search of him, and found among the little or nothing that could not be devoured, his bloodstained sword which he had drawn in self-defence! That and a few other 'indicia' which marked the scene of the struggle, to say nothing of the wild animals' footprints trending away to the pine wood, left no doubt as to the poor fellow's fate. Were the bear not a hibernating beast of prey there are specimens enough of it in those wooded uplands to add a fresh dread to that of the wolf, which under stress of hunger, like the sea bird under stress of storm, invades the haunts of man. Fortunately an Italian winter, however intense, is of brief duration, and within a few days' time even the Austrian slopes of the Alps in the Venetian territory will be ringing with the joyous refrain :—

'Der Lenz ist gekommen,
Der Winter ist aus.'"

URBAN ROOF GARDENS AND ROOF HOSPITALS.

THE physically defective persons who hang about the streets of our great cities all the year round and in the summer time swarm as tramps on the country roads, form a woeful spectacle and social reformers are agreed that nothing should be left undone which may promise a way of coping with this evil. As it is obvious that any scheme of this kind must have the proper upbringing of city children for its principal feature Dr. James Dunbar-Brunton has written to us suggesting that much would be done towards improving the health and physical condition of the juvenile population if all the houses in the poorer quarters were provided with flat roofs which might be used as playgrounds and might be beautified with trees and flowers in tubs and pots. Going more into details, he would have all city councils, which govern the plans of the builders, insist that when houses were built for the poor in long rows undetached the whole length should have flat roofs. These would be protected by a parapet and the children would be safe from straying or accident. These flat roofs would be under the care of the health department of each large city. They would be free playgrounds, costing but little. Each roof should have a covered part where the delicate children could find shelter from rain and sun. He further recommends that for every street or series of small streets a light hospital should be erected on one of these roofs. The number of beds would be in proportion to the area served. These hospitals could be built of frames and should have as much glass in their structure as possible. If it be asked why these hospitals should be built when there is a difficulty in supporting those which are already in use, Dr. Dunbar-Brunton's answer is that these little hospitals are for the tuberculous children of the poor, who will then have a better chance of recovery owing to their removal into a purer atmosphere and the supervising of their food. They would also be within easy reach of their parents who would feel that the children were almost in the same house as themselves and would therefore put no obstacles in the way of their removal. The public health authorities would appoint a medical officer whose duty would be the daily inspection of all roof gardens and hospitals. Each hospital would have a nurse who would be a district nurse. The upkeep of these hospitals would be small and would be drawn from a special fund. The cost of building them would have to be defrayed by public subscription or by private munificence. Theoretically the proposal is no doubt excellent and a portion of it is not entirely novel because the flat roofs of some detached blocks of buildings in various parts of London have for many years been used as places of recreation and for other out-of-door purposes. This can easily be done on the small scale and under single ownership but we fear that under the present conditions of property owning in towns there is little chance of large roof playgrounds being introduced.

THE PRINCIPLES UNDERLYING THE SURGERY OF THE STOMACH AND ASSOCIATED VISCERA.

THE *American Journal of the Medical Sciences* for January contains a remarkable article on this subject by Dr. William J. Mayo. He points out that the study of the embryology of the gastro-intestinal tract illustrates how much more permanent is function than form. The primitive intestinal canal is composed of three parts—fore-gut, mid-gut, and hind-gut—the anatomical distinctions between which are lost in development. Nevertheless, these parts remain physiologically distinct. From the fore-gut are developed the pharynx, œsophagus, stomach, and duodenum. Now all these organs prepare food for digestion but absorb it only to a very limited degree. In operating soon after a meal Dr. Mayo has been struck with the milky lines of full lacteals in the jejunum while none were evident above it. The duodenum—with its wide calibre, fixed position, and delivery point nearly as high as its pyloric origin—enables the chyme to be mixed thoroughly with the pancreatic and biliary juices. In the jejunum, ileum, cæcum, and adjacent part of the colon, which are developed from the mid-gut, absorption takes place. Hence gastro-jejunostomy does not deprive the patient of any appreciable absorbing surface. At the ileo-cæcal valve the greater part of the nutritive elements of the food have been absorbed and the intestinal contents are still fluid. The cæcum absorbs fluid which is held for this purpose between the ileo-cæcal valve and a physiological muscular contracture (the cæco-colic valve). The cæcal function explains why cholecystenterostomy into the hepatic flexure of the colon is so successful in complete obstruction of the common bile-duct when for any reason the duodenum cannot be used. The continuous flow of bile seems to prevent ascending infection, although the colon contains more virulent organisms than the duodenum. On the other hand, when external cholecystotomy is performed the patient loses in the discharge of bile from 20 to 30 ounces of fluid daily, is compelled to drink large quantities of liquid, and still shows signs of dehydration. The value of water in the human economy is testified by its reabsorption in the cæcum. The hind-gut begins at the splenic flexure of the colon. The normal action of the upper colon is antiperistaltic except during defæcation. Mr. C. J. Bond has proved that particles of indigo-carmine placed inside the anus are carried upwards by what he calls "reverse mucous currents."[1] Thus valuable food elements and fluids are carried back into the cæcum. Advantage is taken of this in the administration of saline solution by the rectum. Dr. J. B. Murphy has shown that large quantities of saline solution—from two to four quarts—introduced very slowly into the rectum are absorbed rapidly by being carried by reverse peristalsis to the cæcum. Adami and Ford have found that leucocytes pass out on to the surface of the duodenum and upper jejunum, pick up particles of fat and bacteria of various kinds, and destroy the latter in the neighbouring lymphatics. Some bacteria are carried to the liver and there annihilated. Others pass through the liver and are excreted with the bile. The bile must therefore be looked upon as always infected and probably an attenuated infection is the cause of gall-stones. In Mikulicz's clinic it has been shown that a

[1] THE LANCET, July 29th, 1905, p. 275.

part of the venous blood from the stomach, instead of passing through the portal vein to be sterilised by the liver, returns directly through the anastomoses about the cardiac orifice and is the cause of pneumonia of an embolic character.

THE WORKMEN'S COMPENSATION ACT, 1906.

THE medical profession is much concerned in the provisions of the Workmen's Compensation Act, 1906, which will come into force on July 1st, as, in addition to domestic servants, medical assistants, dispensers, and professional nurses may all come under the head of claimants for legal compensation. The probability is that many of our readers are considering the taking out of new insurance policies designed to meet the comprehensive scope of the Act, while they will have had numerous communications from insurance companies offering to insure them against the extended risks. We suggest that no new policies should be taken out in a hurry. A sub-committee of the Journal and Finance Committee of the British Medical Association has under discussion the possibility of starting a coöperative plan by which medical men could be insured upon highly favourable terms, and THE LANCET is prepared to support the movement if it develops on practical lines. In these circumstances we recommend our readers not to close with any of the offers made to them by various insurance companies until they have been able to judge of the merits of the scheme now under consideration.

"THE BLOT IN RECRUIT TRAINING."

Colonel F. A. Davy, M.D., formerly of the Royal Army Medical Corps, had a good deal to say last week at the Royal United Service Institution on a subject which, as officers of the Army Medical Service know, he has long made his own—namely, the injurious influence of the attitude which the recruit was obliged to assume in the course of those military drills known as "setting-up" drills to which he was subjected. Colonel Davy contended that the "chest swelling" ordered by the drill-sergeant, being in contravention of physical laws, was a cause of embarrassment and injury to important organs of the body, and was, as a matter of fact, in his opinion, contributing largely to the waste of the army. He pointed out that the inevitable result of keeping the act of expiration in abeyance was a disturbance of the balance which existed in health between the pulmonary and systemic circulations. The remedy was, he said, easy, for it was merely to abstain from chest dilation, from the order directing that the fore part of the feet should bear the weight of the body, and from movements for "opening" the chest. The condition known as the "soldiers' heart" with its attendant symptoms has long been recognised by medical officers of all armies and has been ascribed, and is no doubt due, to various causes. It is many years ago since—at the instigation, we believe, of the late Professor Parkes—a committee, known as the "Pack Committee," was appointed to inquire into the subject of the soldier's knapsack, clothing, and accoutrements, and on its recommendation some very important and salutary changes in these respects were introduced into the army. The particular point of view, however, taken up and propounded by Colonel Davy regarding the physical strain and effect of drill had not then been raised, but now that it has been started and can be supported by physiological reasoning it is bound to receive attention. With regard to the causes of cardiac palpitation, functional disturbances of the heart, and high pulse-rates, whether occurring in the civil or military population, for these are not confined to the latter, the influence arising from the use and abuse of tobacco is not to be lost sight of, for the "irritable heart" sometimes means the "tobacco heart." We are glad to notice that Colonel S. P. Rolt, inspector of gymnasia, who took part in the discussion which followed at the Royal United Service Institution, said that the Army Council some time ago decided on a system based on that which had been in operation in Sweden for more than a hundred years, and he felt sure that Colonel Davy would be in full sympathy with the plan now in vogue. The drill-book would be altered on the same principle.

EPIDEMIC CEREBRO-SPINAL FEVER.

WITH regard to the present serious outbreak of cerebro-spinal fever in Belfast, referred to in an annotation in THE LANCET of Feb. 2nd, the statistics of the fatal prevalence of this disease in Glasgow during the last nine months of 1906 are noteworthy. The Registrar-General for Scotland noted in his return for the week ending April 21st last the first fatal case of this disease in Glasgow, and during the remainder of the quarter, ending with June, 26 other deaths from the same cause were reported. The disease became increasingly prevalent in this town during the last two quarters of the year and caused 49 and 59 deaths respectively during the three months ending with September and December. During the 52 weeks of last year 226 deaths were referred to "fever" in Glasgow, of which 135 were certified as resulting from cerebro-spinal fever. Since the beginning of this year the fatality of this disease in Glasgow has shown a further considerable increase, as 68 deaths from this cause were reported in the returns for the five weeks ending on Feb. 2nd. A memorandum, to which reference is made elsewhere (see page 397), has been issued by the health committee of the Glasgow town council summarising the position in that city. The disease has, moreover, also recently shown fatal prevalence in Edinburgh, where nine deaths were referred thereto during the first five weeks of this year. During the week ending Feb. 2nd, 12 more fatal cases of this disease were returned in Belfast; and in Scotch towns two occurred in Paisley and one in Leith, in addition to the 16 in Glasgow and three in Edinburgh included above.

THE SALE OF PROPRIETARY MEDICINES IN THE UNITED STATES UNDER THE NEW FOOD AND DRUGS ACT.

IN the January number of the *American Journal of Pharmacy* Dr. H. W. Wiley, chief of the Bureau of Chemistry, United States Department of Agriculture, shows the effects produced on the composition of medicines by the working of the new Food and Drugs Act. The most striking feature of this Act is that relating to the practical exemption from supervision as to standards of purity and strength of the so-called proprietary remedies. All remedies that are defined in the United States Pharmacopœia and the National Formulary are required by the Act to conform to a rigid standard of strength and purity, but it is important to note that practically the same remedies are allowed to be sold without inspection or supervision when put up in the guise of a patent medicine. This distinction, as Dr. Wiley points out, is in accordance with the laws regulating the practice of medicine and pharmacy. Those who are legitimately engaged in the practice of these callings are required to take a long course of preparatory training and to secure a licence after due examination, and even then they are subject to the strict supervision of the law. On the other hand, the quack or the proprietor of a quack remedy may practise medicine and pharmacy through the public press, giving "medical advice" and dispensing medicines without first undergoing any medical or pharmaceutical training whatever and without paying any fees. The only restrictions which are placed upon them in the United States are to put the names of a few drugs upon the labels and to refrain from misrepresentation. In other words, the new Act practically fails to check

the unspeakable abuses which attend the traffic in quack remedies. In his official capacity Dr. Wiley has during the past few months inspected hundreds of labels of proprietary medicines and their formulæ and the inspection has brought out some interesting points. In the first place, it appears that a large majority of all the proprietary medicines are made up by manufacturing firms whose names do not appear on the labels and who would be heartily ashamed to have them there. Most of these proprietary remedies are compounds of well-known drugs, most of which appear in the United States Pharmacopœia or National Formulary, and doubtless they are copies of ordinary prescriptions. Dr. Wiley points out that it is almost incredible that first-class firms should lend their influence to, or countenance, a practice of this kind. The citizens of the United States are to be congratulated on the fact that the new Act not only sets up standards for drugs but also lays some restriction upon proprietary remedies. The latter must be suitably labelled and the labels must be free from any statement, design, or device that is false or misleading in any particular. Dr. Wiley hopes to be able to interpret the Act in such a manner as to put an end to the disgraceful condition to which the United States has been brought by the introduction into every home of falsely advertised remedies through the medium of the public press. Although the new Act does not go far enough it will serve as a useful object lesson, on which, both in the United States and in this country, may be based wider measures for the complete control, if not the extirpation, of all proprietary remedies.

EXPOSURE OF CHILDREN BY BEGGARS.

THE bitterly cold weather which we have experienced recently has no doubt caused many well-meaning persons to give money when they have seen ill-clad infants shivering in the arms of apparently, and possibly in truth, destitute parents. The case of a woman, named Long, who was brought before the Lord Mayor at the Mansion House police court towards the end of January at the instance of the National Society for the Prevention of Cruelty to Children, and similar prosecutions, should, however, tend to dispel the idea that alms so given do anything whatever to diminish the sufferings of the unhappy infants who are dragged about for the purpose of exciting compassion. In the case referred to evidence was given that the child was a little girl, aged three and a half years, dirty, ill nourished and suffering from exposure and neglect, whose mother had hawked her round ever since her birth as a means of earning a livelihood. As the woman had been three times charged with doing this, as well as being frequently warned, the Lord Mayor sentenced her to six months' hard labour, expressing a hope that the industrial school officers would watch the case. The six months' imprisonment of her cruel parent will keep this poor little girl from the streets until the summer but it is to be noted that in last June the mother was sentenced to a month's imprisonment for a like offence, so it is evident that in summer as well as in winter the misdirected benevolence of the thoughtless makes the exposure of infants in the street a paying occupation. The National Society for the Prevention of Cruelty to Children is to be congratulated upon the conviction obtained and it is to be hoped that the police may not be induced by the activity of a voluntary agency to diminish the attention which it is their duty to accord to such cases.

THE SURGERY OF THE PERIPHERAL NERVES.

Mr. James Sherren has contributed to the *Edinburgh Medical Journal* for October an important paper on the surgery of the peripheral nerves. He points out the confusion which exists as to the terms "nerve grafting," "nerve transplantation," and "nerve anastomosis," which have been used synonymously. Under nerve anastomosis have been included two distinct operations—bringing the end of an injured nerve into contact with some of the axis cylinders of a sound nerve and bringing it into contact with the completely divided sound nerve. Mr. Sherren proposes to restrict the term "nerve anastomosis" to the former operation and to call the latter "nerve crossing." He would drop the term "nerve grafting" entirely. There would then remain a third operation—nerve transplantation. The methods of nerve anastomosis may be divided into peripheral and central, partial and complete. In peripheral anastomosis the affected nerve is divided partially or completely and its peripheral end is brought to the unaffected nerve. In central anastomosis the unaffected nerve is divided partially or completely and its central end united to the affected nerve. In all cases the cut ends of axis cylinders should be brought into contact. This contact may be brought about in three ways. If the affected nerve is small a vertical slit in the sound nerve may provide sufficient axis cylinders; but if it is large a transverse or oblique incision must be made in the sound nerve and the affected nerve sutured in, or a flap may be raised and end-to-end suture performed. The latter method is theoretically the best, as it prevents the possibility of union of an axis cylinder in the central end with an axis cylinder in each peripheral end. In the operation of nerve transplantation it was shown by Merzbacher in 1905 that different results are obtained with grafts taken from the same animal (auto-transplantation), from an animal of the same species (homo-transplantation), and from one of a different species (hetero-transplantation). In auto- and homo-transplantation the transplanted nerve degenerates, but in hetero-transplantation necrobiosis occurs. Hence the results are better in the two former operations than in the latter. Of eight cases of transplantation of human nerve recorded only three are reported at a sufficient interval after operation to admit of some recovery. In two complete recovery has taken place and in the third there is no sign of return of motor power 17 months after operation. On the other hand, out of 16 cases of hetero-transplantation reported at a time after operation to admit of some recovery only one can be said definitely to have terminated in recovery. Nerve transplantation was first performed by Albert in 1876; he used a portion of nerve from an amputated limb. In this country it was first successfully performed by Mr. A. W. Mayo Robson. Into a gap in the median nerve, due to resection of a neuroma, he inserted two and a half inches of the posterior tibial nerve obtained from an amputated limb.

GENERAL ANÆSTHETICS IN THE BUDAPEST SURGICAL CLINICS.

THE experience derived from the Budapest surgical clinics (as recorded by our correspondent in another column) is not that of many British surgeons who have tried the drop method of giving ether and the morphine and scopolamine succession. In the first place, ether, unless given with exclusion of air, seldom, if ever, in the case of adults produces a profound narcosis. The disfavour into which this anæsthetic has fallen abroad has arisen through the unnecessarily large quantities of ether forced upon the patient. This is incidental to the use of masks covered with impervious material and can be avoided when the ether is kept in a reservoir and evaporated by the heat of the patient's expirations. This method was perfected by the late Mr. Clover and is commonly adopted in this country. It has not been recognised sufficiently that narcosis when once established requires only a small amount of an anæsthetic to maintain it. The drop method is the natural swing back of the pendulum to the other extreme and is not justified, we think, by the weight of evidence. That the morphine-scopolamine succession is free from dangers and

after-effects is certainly not to be accepted without further investigation. It has been pointed out that when sufficiently large doses of scopolamine are employed to obviate the use of ether or chloroform the patients are often in danger and the occurrence of death due to the method has been recorded. When a general anæsthetic is used after preliminary injection of morphine and scopolamine, less of the agent is required, but the danger remains since many persons are most unfavourably affected by the injections which once made cannot be limited so far as general action is concerned. The experience with morphine before ether or chloroform has been unfavourable and the addition of scopolamine can only increase the danger. The method it would appear has only a narrow range of use, for example, in cases in which morphine is not contra-indicated and when it is necessary to limit the amount of the general anæsthetic.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE lectures of the Royal College of Physicians of London for the present year will be delivered at the College, Pall Mall East, on the following Tuesdays and Thursdays at 5 o'clock: The Milroy lectures on Kala-Azar, its Differentiation and its Epidemiology, will be delivered by Major Leonard Rogers, I.M.S., on Feb. 21st, 26th, and 28th; the Goulstonian lectures on Certain Acute Infective or Toxic Conditions of the Nervous System will be delivered by Dr. E. Farquhar Buzzard on March 5th, 7th, and 12th; and the Lumleian lectures on Insanity, its Causes and Increase, will be delivered by Dr. G. H. Savage on March 14th, 19th, and 21st.

THE MANUFACTURE OF LEAD PAINTS AND COLOURS.

WE have referred on more than one occasion to the new regulations which the Secretary of State for the Home Department proposed to put into force in regard to the manufacture of lead paints and colours. The draft regulations have now been approved and notice was given last week that they would come into operation on Friday, Feb. 1st. The regulations apply to all factories and workshops in which dry carbonate of lead or red lead is used in the manufacture of paints and colours or in which chromate of lead is produced by boiling. This legislation gives effect to the conclusion that the manufacture of paint colours is dangerous and therefore should come under Section 79 of the Factory and Workshop Act, 1901.

THE PRESIDENT OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE *Scientific American* of Dec. 29th, 1906, in an article on the approaching meeting of the American Association for the Advancement of Science says that the long-established practice of alternating the selection of a President from the representatives of the natural and physical sciences has slowly yielded in recent years to the better policy of selecting the most eminent man of science in the United States for that important position, and at the last meeting the honour was bestowed upon William Henry Welch, America's most famous pathologist. From some biographical particulars given by our contemporary we learn that Dr. Welch was born in Norfolk, Connecticut, on April 8th, 1850. He prepared for Yale, where he graduated in 1870, after which he went to Columbia University, New York, and matriculated in the medical department, more generally known as the College of Physicians and Surgeons. On receiving his degree in 1875 he spent some years studying in Europe. In 1878 he returned to New York city, where he obtained an appointment as demonstrator of anatomy in Bellevue Hospital Medical College. Soon afterwards he became also professor of pathological anatomy in this institution, which chair he continued to fill until 1884 when he was elected to the professorship of pathology in Johns Hopkins University, Baltimore, which he still retains. Five years later, when the Johns Hopkins Hospital was opened, he naturally became its pathologist. Among his numerous contributions to medical literature mention may be made of the sections on pathology and pathological anatomy in the fifth and later editions of Flint's "Theory and Practice of Medicine," of the chapters on organic diseases of the stomach in Pepper's "System of Medicine," and of the chapter on infection and immunity in the same author's "Text-book of the Theory and Practice of Medicine."

Dr. Donald MacAlister, M.D. Cantab., D.C.L. Durh., President of the General Medical Council, has been appointed Principal of the University of Glasgow in succession to the late Principal Story. Dr. MacAlister was Senior Wrangler in 1877 and is Linacre Reader of Physic in the University of Cambridge.

Dr. James Taylor will take the chair at the next dinner of the Edinburgh University Club of London, which will be held at the Criterion Restaurant on Wednesday, Feb. 20th, at 7.30 o'clock.

THE RÔLE OF THE BLOOD PLASMA IN DISEASE.

BY HARRY CAMPBELL, M.D., B.S. LOND., F.R.C.P. LOND.,
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II.[1]

REACTION OF CELLS TO THEIR PLASMIC ENVIRONMENT.

EACH variety of cell responds specifically to its plasmic environment: the muscle cell responds in one way, the gland cell in another way, the nerve cell differently from either; and, again, each sub-variety of these cells has its own special reaction. Even tissues which appear to possess exactly the same structure, such as the nerves supplying the flexors and extensors of the wrist, may respond differently to the same reagents, as shown by the familiar wrist-drop met with in poisoning by lead and by alcohol. Not the most careful microscopic examination can detect the slightest differences between the two sets of nerves, and yet their different reaction to chemical reagents suggests that they are differently constituted.[2] Such specific reactions constitute, indeed, so many delicate tests by which we may detect structural and functional differences undiscoverable by any other means.

A good way of bringing home to the mind how differently different cells respond to chemical reagents is by reference to the manner in which they take up various staining reagents, both during life and after death. It is found that one kind of cells attracts one stain and another kind of cell another stain; nay, that even different parts of the same cell may stain differently.

In considering the interchange which takes place between the cell and its plasmic environment, it must be remembered that the cell consists of a living protoplasmic network containing in its meshes circulating plasma which has percolated from without, and solid non-living particles in the shape of granules, fat globules, and the like. Thus the plasma is brought into intimate contact with every portion of the protoplasm, and opportunity is afforded for free interchange between the two. We must suppose that each type of cell reacts specifically to certain plasmic constituents (food-stuffs, enzymes, hormones, waste products, bacterial toxins, or what not) by uniting chemically with them, and that to others it remains irresponsive and inert. To suppose that every cell responds chemically to each and every one of the multitudinous plasmic substances brought into

[1] The first article was published in THE LANCET of Feb. 2nd, 1907, p. 313.

[2] I say "suggests," not "proves," because the distribution of toxic paralysis may, as pointed out in the previous section, be explained by reference to local differences of circulation.

relation with it, whether they administer to its proper activities or not, implies a degree of unproductive energy such as is hardly likely to exist. That cells may remain inert to plasmic influences is shown by the behaviour of the reproductive cells: when we consider the vast potentialities of these cells and the complexity of structure underlying those potentialities, and when we reflect upon the many plasmic influences, normal and abnormal, which in the course of years are brought to bear upon the reproductive cells—for in every illness, no matter how slight, the plasma tends to depart from the normal—it is abundantly evident that they must be highly resistant to forces acting on them from without. How, otherwise, could they preserve intact their hereditary potentialities? Is it not remarkable that they may for years be bathed in plasma tainted by poisons, such as those of alcohol and ague, and yet preserve all their hereditary potentialities uninjured?[3]

Nature of reaction between the cell and the environing plasma.—We are still largely ignorant as to the nature of the changes which take place between the cell and its plasmic environment. Following Ehrlich, who has done much to aid our conceptions regarding it, I have assumed that when a cell definitely reacts to some plasmic constituent it is by virtue of a chemical union between the two. According to this authority the attraction of the cell for the constituents of the plasma is exercised both by (*a*) the living protoplasm itself, and (*b*) its non-living contents. In each case the attraction is peculiar, both in respect of the substances attracted and the nature of the chemical union resulting.

(*a*) The molecules of the protoplasm itself have the power of assimilating, i.e., incorporating into themselves and building up into living substance, foodstuffs and allied substances consisting of "poisonous (= toxins) and non-poisonous metabolic products of living cells" (Ehrlich). These assimilable substances have for the most part a highly complex composition, which may indeed (as in the case of the toxins) be quite beyond our power of analysis, and they are linked on to the protoplasmic molecules by a *bio-chemical* or, as we may term it, *assimilative* union. Ehrlich assumes that the protoplasmic molecules are provided with a number of different kinds of side-chains or "receptors," and that the foodstuffs and kindred substances are on their part provided with different kinds of haptophore groups, each kind of haptophore group being capable of linking on to, and uniting with, one particular kind of receptor and one only, the two fitting one another like lock and key. If the substance uniting with the cell in this way be a foodstuff, well and good, but if it be a toxin, the normal vitality of the protoplasm is interfered with, and there is disordered function. Union of this latter kind is for the most part slowly effected, and hence any symptoms which may result therefrom are apt to be slow in development. The union, moreover, is of a very firm kind, so that it is not possible to extract the assimilated substance after death by any of the ordinary methods of extraction: disunion can, in fact, only be effected by vital katabolism, and hence the symptoms which result from the assimilation of toxins tend to be protracted. Another feature of this kind of union is that it is capable of giving rise to antibody formation by the exuberant production of receptors and their escape into the blood stream, where they are free to combine with the haptophore groups belonging to them.

(*b*) The cell also attracts to itself certain plasmic constituents by means of its non-living contents which unite chemically with these constituents, and these, being thus concentrated within the cell, may influence the vital changes between the living protoplasm and the plasma soaking it. Such "contact" action, as it has been termed—i.e., action independent of actual chemical union with the protoplasm itself—is well exemplified in the case of such a substance as prussic acid, which, according to Geppert, causes "internal suffocation of the organs," by preventing the free interchange of oxygen in them.

This kind of chemical union differs from assimilation in many respects. In the first place, the substances attracted have a comparatively simple composition admitting of ready analysis, comprising as they do such non-assimilable substances as prussic acid, strychnine, and other alkaloids. Then, again, the union takes place with great rapidity, and far from being firm and intimate, as in assimilation, is one admitting of easy dissociation,[4] so that the united substance can not only be readily recovered after death by the ordinary processes of extraction, but is often rapidly disassociated and eliminated from the body during life. Hence symptoms due to non-assimilative union are apt to develop quickly, and quickly to be recovered from.

The attraction which the contents of the protoplasmic meshwork may exercise on the constituents of the plasma is well shown in the affinity which exists between certain narcotics and fatty substances. Thus the ability of the red blood corpuscles to take up chloroform is due to the cholesterin and lecithin which they contain, and Pohl has referred the union of chloroform in the brain to the attraction for it of similar fat-like bodies in that organ. Others have noticed the relation between narcotic action and solubility in fat, and it has further been shown that many substances which are readily taken up by the brain are attracted with equal readiness by adipose tissue.[5]

Functional and structural reactions.—Cells react to their plasmic environment in two ways—functionally and structurally; the plasma, that is, not only excites their functional activities but influences their structure also. The distinction between the two effects is, however, more artificial than real, because, as we shall see in the next section, whenever a new form of functional activity is excited in a cell a structural change is effected in it at the same time; and it is scarcely necessary to observe that structural change implies a corresponding change in function. It is nevertheless convenient to consider these functional and structural reactions separately.

THE INFLUENCE OF PLASMA ON FUNCTION.

The normal plasma is able to influence cell function in an infinite variety of ways. The like is true of morbid plasma which is responsible for a very large number of the functional disturbances met with in disease. Let us now consider some of these functional reactions to plasmic influences.

Foodstuffs.—Though our knowledge of the subject is meagre, there can be no doubt that each type of cell reacts specifically to the nutrient constituents of the plasma, the nature of the reaction depending (on Ehrlich's conception) upon the nature of the receptors with which the protoplasmic molecules belonging to the different types of cells are furnished. We must suppose, for example, that the receptors belonging to the molecules of muscle protoplasm have the power of linking on an abundance of food molecules, especially of carbonaceous food, which can be rapidly katabolised without any appreciable increase in the katabolism of the central nitrogenous kernels, a view which enables us to explain the fact that, while the output of carbonic acid is greatly increased during active exercise, that of urea suffers scarcely any change.

Enzymes.—It is certain that ferments play an important part in cell nutrition, possessing, as they are now known to do, the power not only of breaking down large complex molecules into smaller and simpler ones, but also of building up again those smaller molecules into the same large complex molecules as before. Each kind of cell elaborates its own special enzyme; thus from the liver as many as a dozen, and from muscle no less than four, have already been extracted, and no doubt the specific reaction of the individual muscle and liver cells to the foodstuffs presented to them is largely determined by their respective enzymes. Besides these enzymes, the function of which is to determine the reaction of the cells producing and containing them to their plasmic environment, others are met with in the circulating plasma; and it seems difficult to avoid the conclusion that, carried as they are to all the tissues of the body, they exercise a widespread metabolic influence on the cells of the organism. That the composition of the plasma profoundly influences the metabolism of the tissues generally is certain; so much so, indeed, that whenever a spontaneous alteration in the general metabolism of the body occurs, as when, for example, a person without altering his habits of life becomes rapidly fatter or thinner, we may be sure that it is through the plasma that the change has been wrought, there being no other agency capable of

[3] Some hold that the hereditary potentialities of the reproductive cells can be influenced by the environment, and this may be the case; but even so the above considerations show that these cells must yet be highly resistant to plasmic influences.

[4] It has been suggested that the nature of the chemical unions in question is something like that between a dye and a dyable fabric—i.e., either a salt-like combination or a "solid solution."

[5] See Studies in Immunity, p. 426, by Dr. Paul Ehrlich.

effecting so general an alteration in nutrition. Doubtless such alterations in nutrition are sometimes due to altered digestive function, but in other cases we are compelled to assume that the blood has undergone some change in respect either of its enzymes or of its hormones. I shall in its proper place adduce evidence to show that when, in the later stages of diabetes, tissues such as the muscular yield sugar, it must be on account of a morbidly constituted plasma, the defect probably relating to an enzyme needful for the assimilation or destruction of sugar.

Hormones.—We need not stop here to consider in detail the specific reactions of the various cell-types to the hormones. Let it suffice to say that some of these bodies, those yielded by the thyroid and the parathyroid glands, for example, appear to have a very general action on the tissues, although, doubtless, exhibiting some degree of selective action; while others, when present in physiological quantities at least, seem to act upon certain tissues only; thus carbonic acid acts especially upon the respiratory centre in the medulla, secretin upon the pancreas and liver, while the action of adrenalin is largely confined to the sympathetic nerves, a fact of some interest in connexion with its source from the medullary portion of the adrenal glands—that part, namely, which is developed from the sympathetic system. Among the functional effects produced by hormones the influence of the pineal secretion in promoting sleep may be cited.

Menstruation, again, a condition in which the functions of the entire organism are affected, is now known to be produced by an ovarian hormone, while the profound functional changes observed during pregnancy are brought about by hormones yielded by the ovaries and the fœtus.

Disease, further, affords striking illustrations of the functional effects which may be brought about by the hormones. Witness the vomiting, exhaustion, and fall of blood pressure which characterise Addison's disease. Witness also the long array of contrary symptoms met with in Graves's disease and myxœdema: in the one the vital fire blazes fiercely, as shown not only by the increased output of carbonic acid and urea but by the characteristic loss of weight, sweating, palpitation, and distressing nervous agitation; in the other the furnace glows dully, as evidenced by the diminished output of carbonic acid and urea, the increase of weight, dryness of the skin, slow pulse, and mental hebetude; in the one the skin is pigmented, in the other depigmented; in the one there is often exophthalmos, and in the other enophthalmos; finally, in the one disease we find hypertrophy, and in the other atrophy, of the thyroid gland. This contrast strongly suggests that the phenomena of Graves's disease are due to over-action, and those of myxœdema to under-action, of the thyroid (or parathyroid) function; but whether this be or be not the true pathology of the former, of this we may be assured that the symptom-complex of Graves's disease is as certainly of plasmic origin as is that of myxœdema; through no other medium than the plasma would it be possible to produce its characteristic symptoms. I desire to emphasise this point.

The multiplicity of hormones yielded by the tissues, and their potent influence on function, prepare us for the conclusion that many functional disorders are hormonically induced, and there can be no doubt that such is the case. For it is obvious that the plasma normally contains many different hormones, each the result of special metabolic activity, and that, if health is to be preserved, the supply of the hormones must be regulated with great nicety. There is thus abundant opportunity for the plasma to become faulty in respect of its hormonic constituents; it may, e.g., contain too little, too much, or a perversion of, any one hormone, and these individual defects may be combined in endless ways, producing an endless variety of plasmic imperfections, each of which has its own peculiar effect upon metabolism. There can, indeed, be no doubt that disordered hormonic function is responsible for numerous functional disorders. It is probable, for example, that the nervousness associated with pregnancy, menstruation, and the climacteric may, in part at least, be due to an excess, deficiency, or perversion of the hormones secreted in connexion with them. Be this as it may, it is certain that nervousness is often due to disturbance of hormonic function. The extreme nervousness of patients suffering from Graves's disease sufficiently proves this, and I cannot doubt that many cases which are diagnosed as "nerves" or as "neurasthenia" are examples of genuine Graves's disease in which the classical signs are masked or absent, for I have observed over and over again that cases of this latter disease shade off imperceptibly into cases which are indistinguishable from simple nervousness or neurasthenia. Many of these are, I am convinced, atypical forms of Graves's disease; the patients are generally thin young women who display great nervousness—i.e., they are easily startled, restless, agitated, and apt to tremble. I have seen a large number of such cases.

Paralysis agitans is another disorder which is possibly hormonic in origin. That it is plasmically induced may, as we shall see later, be regarded as certain. It is also probable that many of the functional peculiarities of old age are referable to peculiarities in hormonic activity.

Normal excreta.—All substances which need to be eliminated from the body may be spoken of as excreta, which term may thus be made to include not only those which are formed within the body, but also those (e.g., opium, lead) which have been introduced from without. Specificity of cell reaction is well shown by the way in which the different kinds of cell respond to the normal excreta. Whether or not any of these substances play, as I have suggested, a normal part in stimulating the nervous system, it is certain that they excite the activities of the cells engaged in excreting them, and that these cells, if no longer called upon to exercise their excretory functions, would slowly but surely degenerate. Such cells have, in fact, become specialised in many different ways with a view to the excretion of a number of different substances, and I presume the great variety of epithelial cells met with in the kidneys is related to the many different kinds of excreta which these organs are called upon to eliminate.

But while the presence in the plasma of normal excreta in normal proportions exercises a beneficial influence on function, their presence in excess may cause widespread disturbance. When a particular excretum is present in great excess, cells other than those normally engaged in eliminating it may help in the work of excretion, these "impressed cells," though irresponsive to a small percentage of the excretum reacting specifically to a larger dose of it. In these circumstances the excretum tends to be eliminated by all the excretory glands indifferently, and indeed by all the surface cells of the body, such as those of the skin and the mucous membranes, but especially by the respiratory and digestive tracts. Some excreta, such as carbonic acid and urea, have, however, a great difficulty in getting out by any route other than the normal one; thus, though in cases of urgent dyspnœa some carbonic acid may possibly escape by the stomach and bowel, and help to cause the "wind round the heart" so frequently complained of in heart disease, the amount thus got rid of must be very small. The difficulty which the organism experiences of eliminating urea by any other route than the kidneys is well known.

Here the possibility of disease being excited in tissues by the unwonted escape of excreta through them may be referred to. So long as one organ eliminates its normal excreta it is not likely to be injured, but rather to be benefited by the process. When, however, a tissue is called upon to exercise an excretory function which is not proper to it, it may suffer injury. A familiar instance of this is afforded by the effect of cantharides upon the kidneys, and it is possible that some forms of nephritis are due to the elimination by these organs of irritant substances which they are not under normal conditions required to eliminate. Inflammatory conditions of the skin and mucous membranes may be set up in exactly the same way. William Hunter has attributed catarrh of the bile ducts to the elimination by them of irritant poisons, and there can be little doubt that bronchitis may own a similar causation; the respiratory tract excretes many poisons other than carbonic acid, and the numerous varieties of foul breath met with in disease show that many of the morbid contents of the plasma escape by this tract, a fact which may help to explain the bronchitis of the gouty, as well as of improperly fed children. In these latter the blood is contaminated by poisons absorbed from the digestive canal, and in the elimination of these poisons by the respiratory tract, bronchitis, laryngitis, pharyngitis, and rhinitis may result. I would remark in passing that it is thus not a mere old woman's saying, but an actual fact, that a child "cuts its teeth with a cough": the cutting of the teeth disturbs digestion, this leads to the generation of gastro-intestinal poisons, and so to toxæmia, which in its turn sets up bronchitis.

Abnormal excreta.—As with normal, so with abnormal

excreta, specificity of reaction is observed, and this whether the excreta result (*a*) from metabolic defect, (*b*) from the action of pathogenic bacteria, or whether they (*c*) are directly introduced into the body.

(*a*) *Excretory substances engendered by morbid metabolism.*—The symptoms of uræmia are due not only to the retention of normal waste products, but, as pointed out by Rose Bradford, to poisons engendered by the disturbed metabolism consequent on the renal failure. Many of the phenomena of diabetes, again, are due to the action of autogenetic poisons. There can be no doubt, for example, that diabetic coma is thus induced, though we are still ignorant of the nature of the substance or substances inducing it, whether it is due to B-oxy-butyric acid, to certain precursors of this acid, or what not. The vomiting, delirium, and coma met with in malignant jaundice probably also result from autogenetic poisons.

Among the toxæmias due to morbid metabolism we may include those due to indigestion, though these may often be caused in large measure by the absorption of bacterial poisons. These indigestion toxæmias, whether strictly autogenetic or of bacterial origin, are responsible for a vast amount of ill-health and are of the utmost interest to the physician. No one passes through life without at some time or other having his blood contaminated in this way; in some, indeed, the plasma is never free from such contamination, and not a few die prematurely in consequence. Yet these toxæmias are often overlooked, for they are by no means necessarily attended by obtrusive gastric symptoms, such as pain, flatulence, or acidity, by many erroneously regarded as the sole evidence of indigestion; for it is too often forgotten that the stomach plays but an insignificant rôle in the digestive processes, that gastric digestion is, in fact, but the prelude to the real serious business of digestion which, beginning in the intestines, is consummated in the liver; it is essentially intestinal and hepatic indigestion which are responsible for the indigestion toxæmias. In saying this I do not wish to imply that gastric indigestion never causes toxæmia: the occurrence of tetany—to mention but one affection—in cases of dilatation of the stomach proves the contrary; moreover, toxæmic symptoms may often be observed very soon after food has been taken, before, that is, there has been time for any of it to enter the bowel.

Here I would again insist upon the fact pointed out in Section I.—namely, that the varieties of indigestion are not limited, and that each different kind produces its special toxæmia; and, inasmuch as each variety of toxæmia sets up its own peculiar symptoms, it is manifest that indigestion toxæmia may be responsible for an immense variety of symptom-complexes, some of which may be sufficiently definite to constitute distinct clinical entities, such as gout and rickets, but most of which are of too indefinite a character to admit of individualisation. It is scarcely necessary to observe that the recognition of the large part which indigestion toxæmia plays in disease is of the utmost importance to the practical physician.

Among the functional disturbances which may be set up by this species of toxæmia are headache, tinnitus, giddiness, and other cephalic sensations; irritability, mental depression, nervousness, drowsiness, disturbed sleep, bad dreams, lassitude, muscular weakness, tremor, twitchings, convulsions, pains in various parts of the body, palpitation, flushing, shivering, and sweating. Such symptoms may occur singly or indiscriminately combined in any kind of indigestion, though each kind tends to cause its own special symptomatic group. Thus, sweating and convulsions are common results of that variety which is the cause of rickets; irritability and arthritic pains, of that form which underlies gout; while headache, irritability, mental depression, flushing, shiverings, and sweatings are common accompaniments of menstrual indigestion, i.e., the indigestion which is so commonly associated with menstrual irregularities, and which there can be little doubt is largely responsible for menstrual nervousness—those nervous phenomena—namely, which almost invariably accompany the slightest menstrual irregularity. Some of these, such as the headache, giddiness, and flushing which result from suppressed menstruation, may, it is true, occur independently of indigestion, being possibly the direct result of the disturbed vaso-motor function consequent on the interruption of the normal vaso-motor rhythm, but other symptoms, such as mental depression and sweating, cannot so easily be explained in this way. To account for all the symptoms of menstrual nervousness we must, in short, assume a faulty condition of the plasma, resulting either from some digestive or hormonic defect, or possibly from both these causes combined.

I have mentioned headache as one of the results of indigestion toxæmia. When thus arising it may assume many forms, one of the most remarkable being megrim, which can often be cured by regulating the diet. The first effect of the poison, or poisons, producing it is often tonic and stimulant, the patient feeling preternaturally well; later, reaction sets in, with headache and malaise, as may happen after taking opium or alcohol. What is the nature of the indigestion which causes the megrim we do not yet know; possibly the liver is the organ chiefly at fault.

Bearing in mind the multiplicity of the different kinds of indigestion and of the poisons to which they give rise, some of which are known to be capable of causing mental symptoms, such as irritability, depression, and drowsiness, it does not seem improbable that certain cases of insanity may have their origin in indigestion, and this is rendered all the more likely by the fact that the digestive functions are so frequently disturbed among the insane. Similarly, indigestion toxæmia may enter into the causation of epilepsy. The convulsions of rickety children are certainly produced in this way and it is known that these convulsions may later in life assume the characters of genuine epilepsy. But whether or not epilepsy may take its actual origin in indigestion toxæmia it may certainly be aggravated by it. This variety of toxæmia probably also plays no inconsiderable part in the causation of neurasthenia.

(*b*) *Poisons engendered by bacterial agency.*—The specific reaction of the cell to plasmic agencies is strikingly shown in the case of the bacterial poisons. Not the least remarkable of these reactions are those which have for their object the destruction of the bacteria giving rise to them. When these enter the tissues they generate certain poisons which, gaining entrance to the plasma, sound a note of alarm throughout the organism. To this call the phagocytes respond at once: they rush out of their resting-places, and are possibly even stimulated to multiply, leucocytosis being the result; while in regions where the bacteria are especially abundant these same phagocytes, bursting through their capillary boundaries, surround the bacteria for the purpose of engulfing them. Another no less remarkable effect of the bacterial poisons on the cells of the organism is the formation by the latter of receptors which, becoming detached, constitute anti-bodies, the effect of which is either to neutralise the poisons, destroy the bacteria, or render the latter more easy of digestion by the phagocytes.

Such reactions serve a useful purpose, but unhappily the bacterial poisons do not always excite useful reactions; on the contrary, their union with the protoplasmic molecules interferes with the function of the cells, and that often most gravely. These injurious reactions are endless in number, and it would be useless to attempt a detailed description of them. They may lead, indeed, to almost every functional disturbance met with in disease, such as headache, giddiness, tinnitus, deafness, blindness, hallucinations, delirium, coma, insanity, twitchings, convulsions, rigor, flushing, sweating, dry skin, tachycardia, vomiting, rapid breathing, and nausea.

Some hold that modern pathology takes an altogether exaggerated view of the part which the bacterial poisons play in disease; but surely without reason, for scarcely a month passes but the list of diseases which can be definitely ascribed to bacterial action is added to, and often it is possible experimentally to reproduce in all its features a bacterially produced disease as it occurs in man, by injecting animals with poisons yielded by artificial cultures of the specific bacterium. Thus by injecting certain animals with a mixture of the albumoses and the toxin obtained from cultures of the bacillus diphtheriæ, Sydney Martin has shown that the body temperature is raised, the weight reduced, and the heart and nervous system are affected in almost exactly the same way as when the disease attacks man.[6]

(*c*) *Poisons introduced from without.*—Finally, we have to consider the reaction of the tissues to chemical substances introduced as such into the body—e.g., drugs, alcohol, and poisons such as those which induce pellagra (from bad maize), ergotism (from diseased rye), and botulism (from

[6] A Manual of General Pathology, Sydney Martin, M.D., F.R.S., p. 81 et seq.

diseased meat). It is scarcely necessary to insist upon the infinite variety of ways in which the cells of the body respond to drugs. Every drug, in fact, acts upon the tissues in a manner peculiar to itself. Among the innumerable symptoms which may result are: headache, tinnitus, giddiness, deafness, blindness, changes in the pupil, stupor, delirium, coma, hallucinations, mental depression, paralysis, convulsions, numbness, tingling, dilatation and contraction of blood-vessels, sweating, dryness of the skin, tachycardia, bradycardia, nausea, vomiting, diarrhœa, constipation, ischuria, polyuria, albuminuria, glycosuria, phosphaturia, oxaluria, hæmaturia—their name is, in fact, legion.

It is interesting to observe that drugs can induce most of the mental symptoms met with among the insane, not only depression, excitement, hallucinations, delusions, and incoherence, but such subtle mental effects as a rapid flow of ideas and an apparent lengthening of time and the widening of space—phenomena experienced in some forms of insanity: the latter phenomena are well known to occur after the administration of hashish. It is worthy of note, too, in this connexion that the effects of large quantities of alcohol are much the same as those observed in general paralysis of the insane.

Comparative susceptibility of the various cell-types to plasmic influences.—Of all the various kinds of cell the neurons are the most impressionable to environmental influences, the gland cells probably ranking as the next most impressionable, the muscle cells as still less so, and the connective-tissue cells as the least impressionable of all. That the neurons should be the most susceptible is just what we should expect, seeing that the essential function of the nervous system is to place the individual in correspondence with his external environment, and to coördinate his internal activities, to which ends a most delicate sensitiveness of response to a variety of subtle agencies is needed. The exquisite sensitiveness of nerve cells to mechanical agencies is exemplified by the sensory nerves, especially those subserving sight, hearing, and cutaneous sensibility. Not only are these particular neurons more impressionable to physical agencies than any other cells in the body, but it will be found that the neurons generally are of all cells the most impressionable to plasmic influences. Hence it is that plasmic defects more readily affect the neurons than other cells. There is, however, one kind of plasmic defect from which the neurons suffer less than might be supposed—namely, impoverishment of the plasma. It is a remarkable fact that in starvation the nervous system atrophies less than any other tissue, doubtless because its importance to the life of the organism renders it necessary that, like the innermost citadel of a fortress, it shall be capable of holding out longest, for which reason it has been endued with the power of feeding on the less noble tissues. I am not, of course, arguing that the nervous system does not suffer under prolonged starvation, but merely suggest that in minor and temporary degrees of starvation it probably suffers less than other tissues. One may, indeed, sometimes observe after a lengthy abstinence from food an unusual brightness of intellect and an increased feeling of fitness generally—results which may perhaps be due to a reduction in the toxicity of the blood.

But while there may be doubt on this point, of the extraordinary susceptibility of the neurons to chemical influences there can be no doubt. This fact is well brought out by studying the action of drugs on the organism: it will be found that most of them produce their effects essentially through the nervous system. This is, naturally, the case with drugs which act as anæsthetics, hypnotics, anodynes, nerve sedatives, and nerve tonics; but it is also largely true of other drugs, such as purgatives, emetics, anti-emetics, sudorifics, diuretics, and drugs acting upon the cardio-vascular system; while, with the exception of the corrosives and metallic irritants, it will be found that practically all the poisons cause death by their direct action on the nervous system.

This susceptibility of the nervous system to plasmic influence is further shown by the extraordinary variety of response met with among the different kinds of neurons. Probably all the voluntary muscle fibres of the body respond in much the same way to the same plasmic influence, though doubtless some differences obtain even in their case. Gland cells show a greater variety of response than muscle cells, each type of gland cell responding in a way peculiar to itself; but then there are only a comparatively few different kinds of gland cells, say, some 30 or 40, giving no more than the same number of different reactions. The different kinds of neurons, on the other hand, are to be reckoned by the hundred, each having its own specific response; nay, different parts of the same neuron may respond differently; thus in a lower motor neuron the end-plate, axon, and cell body all respond after their own peculiar fashion. This susceptibility of the neuron to chemical stimuli prepares us for the conclusion, which I shall insist upon later, that most nervous disorders originate in the plasma, and that their treatment essentially consists in correcting the plasmic defect causing them.

The resistance of cells to noxious influences.—We have dealt with the susceptibility which the component cells of the organism display to noxious plasmic influences; a word may now be said as to the resistance which they offer to such influences. The view that all the different cell types do not respond actively to each and every one of the multitudinous substances present in the plasma, but that to some they remain wholly passive, applies as much to the morbid as to the normal constituents of the plasma. We saw reason to believe that each cell type reacts to certain plasmic constituents only, ignoring (so to speak) others. Now we know that poisons manifest a selective action, profoundly affecting the structure and function of some cells, while leaving others apparently unaffected. This immunity may certainly result from mere passive irresponsiveness, but it is probably also due to the operation of special defensive mechanisms on the part of the immune cells. That cells can offer an active resistance to poisons seems to be proved by the fact that they can in some measure learn to accommodate themselves to them. On the other hand, there can be no doubt that their immunity is often due to mere irresponsiveness, for otherwise in every form of blood poisoning each and every cell of the body would need to put into operation a special defensive mechanism; and this would involve the expenditure of an amount of energy such as is hardly likely to occur.

We may thus speak of the cells of the body as offering resistance—active or passive—to noxious plasmic agencies; and in view of the multitudinous varieties of toxæmia, their great frequency and often long duration, it is obvious that, whether active or passive, it must be considerable.

Sometimes, as happens, for instance, in severe diphtheria, chronic alcoholism, and probably also Graves's disease, the condition of the plasma is such as to damage all the cells of the body. In other cases this fluid may be infected by poisons, which while gravely injuring some cells leave others unharmed. Arsenical poisoning, for example, may cause an actual breaking up of peripheral neurons while leaving uninjured such highly organised neurons as those which subserve the operations of mind. Whether we suppose that these cells act passively towards the drug, or oppose an active resistance to it, their comparative immunity to a substance which acts as a virulent poison to other cells is remarkable, the more so when we consider the exquisite sensitiveness of nerve cells in general to physiological stimuli. There are many other plasmic affections which while causing widespread tissue disorganisation leave the cortical neurons unaffected. In such a disease as granular kidney the plasma contains poisons which induce a wholesale destruction of renal cells, profound changes in the cardio-vascular system, as well as in many other organs and tissues; and yet the cortical neurons, though in the end they, too, succumb, may for 10, 20, and even 30 years successfully resist the malign influence which has injured, or even destroyed right out, multitudes of less noble, and one would have thought more resistant, cells. Some of the world's best work has been done by men well advanced in granular kidney, men distinguished alike for strength of intellect and tenacity of purpose. Indeed, I have sometimes wondered whether in this affection some essence is not generated which alters the entire affective nature, and this often in the direction of inspiring self-confidence and insuring energetic action.

That the delicately organised and in many respects highly impressionable cortical cells should yet be capable of effectively resisting highly noxious influences is possibly to be explained by their relatively high importance in the body politic, for any serious interference with effective mental guidance must, in a state of nature at least, lead to rapid extinction. Indeed, we can hardly doubt that those cells which are the most important to the organism are, on the whole, the most resistant to noxious plasmic influences, having gradually acquired their excess of resistance during the process of

phylogenesis; cells such as those constituting the respiratory centres we should expect to be among the most resistant in the organism; and, again, those subserving consciousness to be more resistant than, say, those situated in the anterior spinal cornua.

In considering the active, as distinguished from the passive, resistance which the component cells of the organism offer to morbid influences we must take due account of their adaptability. Living cells learn in some measure to adapt themselves to all but the most pernicious environments, and it is probable that in all chronic disorders of the plasma some degree of adaptation takes place. How often do we see people with pronounced anæmia—to take a single instance—going about their occupations as if they were perfectly well, people who would resent the imputation of being other than in vigorous health. Every day we expect them to break down; but still they go on, month after month, year after year. One can hardly doubt that in cases of this kind the tissues, though necessarily suffering from the morbid blood state, become in some degree adapted to it.

Summary.—We have seen that the plasma may depart from the normal in an infinite variety of ways, in respect alike of its nutritious constituents, its hormones, its enzymes, and its excreta; and we have further seen that each variety of morbid plasma produces its own peculiar functional changes in the tissues. It follows that an infinite variety of symptom-complexes can be set up through the blood plasma. Wherefore in all functional disorders we should seek for a possible cause in the condition of this fluid. We must ask ourselves wherein it is faulty, whether in respect of nutritive ingredients, hormones, enzymes, or excreta; and, having decided this point, we must set resolutely to work to correct the defect, a task in which we shall find ample scope for the exercise of skill and judgment.

(To be continued.)

THE SECOND REPORT OF THE ROYAL COMMISSION ON HUMAN AND ANIMAL TUBERCULOSIS.

THE issue of this report[1] may confidently be said to mark an important epoch in our knowledge regarding the etiology, pathology, and mutual relationship of human and animal tuberculosis. Hitherto, it will be remembered, the only published document issued by the Commission has been a brief first report in 1904, the main object of which was to state certain results which called for warning against any relaxation of administrative precautions in regard to tuberculosis in milch cows and animals used for food. The second report sets out the results of the great mass of experimental work carried out since the inception of the Commission. It specifies matters on which definite conclusions are possible, discusses other results which may now be made the subject of legitimate speculation, and indicates certain important lines of inquiry which are still being pursued. The report has been signed by all the Commissioners: the late Sir Michael Foster, who was chairman, Dr. G. Sims Woodhead, Dr. Sidney H. C. Martin, Sir John McFadyean, and Sir Rubert W. Boyce, and by the secretary of the Commission, Dr. E. J. Steegmann. By official custom it is styled an "interim" report, but in regard to many of the questions investigated it contains what is in all probability the final word of the Commission. This will be judged from the concluding paragraphs which we quote in full:—

> There can be no doubt but that in a certain number of cases the tuberculosis occurring in the human subject, especially in children, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis; and there also can be no doubt that in the majority at least of these cases the bacillus is introduced through cows' milk. Cows' milk containing bovine tubercle bacilli is clearly a cause of tuberculosis and of fatal tuberculosis in man.
>
> Of the 60 cases of human tuberculosis investigated by us 14 of the viruses belonged to Group I., that is to say contained the bovine bacillus. If, instead of taking all these 60 cases, we confine ourselves to cases of tuberculosis in which the bacilli were apparently introduced into the body by way of the alimentary canal, the proportion of Group I. becomes very much larger. Of the total 60 cases investigated by us 28 possessed clinical histories indicating that in them the bacillus was introduced through the alimentary canal. Of these 13 belong to Group I. Of the nine cases in which cervical glands were studied by us three, and of the 19 cases in which the lesions of abdominal tuberculosis were studied by us, ten belong to Group I.
>
> These facts indicate that a very large proportion of tuberculosis contracted by ingestion is due to tubercle bacilli of bovine source.
>
> A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cows' milk containing tubercle bacilli. The presence of tubercle bacilli in cows' milk can be detected, though with some difficulty, if the proper means be adopted, and such milk ought never to be used as food. There is far less difficulty in recognising clinically that a cow is distinctly suffering from tuberculosis, in which case she may be yielding tuberculous milk. The milk coming from such a cow ought not to form part of human food, and indeed ought not to be used as food at all.
>
> Our results clearly point to the necessity of measures more stringent than those at present enforced being taken to prevent the sale or the consumption of such milk.

In order properly to appreciate the facts and reasonings on which these conclusions are based it is essential to read the report itself, and from end to end. It is impossible to attempt an epitome of the closely reasoned argument which runs through its pages or to make selections from the many questions relating to the propagation and transmission of tuberculosis in man and the lower animals on which the Commissioners are able to throw new light as a result of their investigations.

An addendum to this report, oddly termed an "Introduction," gives an account of the arrangements made by the Commissioners for their experimental work. Two separate farms near Stansted in Essex were utilised, neither of which had been used for keeping cattle for several years. On each of these farms elaborate arrangements were made for the provision of laboratories, stabling, cowsheds, and the like, and for resident staff. One of these farms, Blythwood, was used for investigation of tuberculosis of human origin; the other, Walpole, for parallel investigations of tuberculosis of bovine derivation. At each farm all work was kept completely separate from that done at the other. A third laboratory, distinct from those on the farms, was provided at Royalcote for carrying out comparative work. The investigations at these farms involved the utilisation of large numbers of animals of different species and the "Introduction" indicates the elaborate precautions which were taken to avoid the use of animals which were already infected by tuberculosis. The original materials or "strains" used for experimental purposes came, in the case of bovine viruses, from the Royal Veterinary College or from the London meat market. The human viruses were obtained from various sources, chiefly from the London hospitals and infirmaries, and, though not specially selected, were representative of the chief types of tuberculosis as commonly found in the human subject in this country.

A further addendum to the report consists of an analysis prepared by Dr. Martin of the experimental results obtained by the Commission from the beginning of its inquiries to November of last year. The conclusion of this addendum is here reproduced, as it presents in concise form an account of the principal results with which the Commission has had to deal and gives in outline some of the main considerations which are elaborated in the report itself.

> 1. BOVINE TUBERCULOSIS. (30 STRAINS EXAMINED.)
>
> The bacillus of bovine tuberculosis has been shown by the experiments to have certain characteristics as follows:—
>
> α. It shows some variations in its growth on artificial media and according to these variations can be arranged into three "Grades" (I., II., III.).
>
> β. When inoculated into bovines, rabbits, guinea-pigs, pigs, goats, monkeys, and the chimpanzee in appropriate doses it produces death by generalised tuberculosis.
>
> γ. It shows stability as regards its cultural characters, both when subcultured and when passed through animals. Whether these characters can be altered by prolonged passage in certain animals is still the subject of experiment and cannot now be answered.
>
> δ. It shows great stability in virulence both after long subcultivation and after passing through animals.
>
> 2. HUMAN TUBERCULOSIS. (60 CASES EXAMINED.)
>
> The bacilli of human tuberculosis show a greater variety than those of bovine tuberculosis.
>
> *Group I (15 Cases Examined.)*
>
> α. The bacilli obtained from the virus of human beings in this group have all the characters of the bacillus of bovine tuberculosis as regards cultural characters, virulence for the animals previously mentioned, and stability of cultural characters and of virulence.
>
> The bacillus of this group is identical with the bacillus of bovine tuberculosis.
>
> β. The bacillus of these cases was a single bacillus—there was no evidence of a "mixture" of different kinds of bacilli.
>
> γ. The bacillus was the cause of death of the individuals from which it was obtained. This is more particularly shown by the study of three viruses, in which general tuberculosis was the cause of death

[1] London, Wyman and Sons, Fetter-lane; Edinburgh, Oliver and Boyd; Dublin, E. Ponsonby. Cd. 3332. Price 9½d.

of the child. The disease started as abdominal tuberculosis, but became generalised. Culture not only from the mesenteric glands but also from the bronchial glands and lungs and meninges had the characteristics of the bovine bacillus in cultivation and in virulence. No mixture of bacilli was here present. The children died of an infection by the bacillus of bovine tuberculosis.

This group includes three cases of cervical gland tuberculosis and 11 cases of abdominal tuberculosis.

Group II. (10 Cases Examined.)

The bacilli obtained from the virus of human tuberculosis in this group differs from the bacillus of bovine tuberculosis in the following points:—

α. In culture they are more luxuriant and are distinguished as referable to "Grades" IV. and V.

β. When inoculated into calves and rabbits they do not produce the generalised and fatal disease caused by the bovine bacillus.

The result of inoculation is not a negative one, but varies within certain limits with different viruses, and in rabbits the viruses occasionally kill the animal by producing a generalised disease.

They agree with the characteristics of the bovine bacillus in the following points:—

α. They produce general tuberculosis in monkeys and the chimpanzee.

β. The lesions produced in these animals are the same anatomically as those produced by the bovine bacillus.

γ. The lesions produced in calves and rabbits are histologically tuberculosis, although usually they show retrogression.

This group includes cases as follows:—Sputum culture, 2; pulmonary tuberculosis, 10; general, 1; bronchial gland, 2; cervical gland, 6; abdominal, 3; joint, 9; testicle, 1; kidney, 1. The experiments show, however, that this division into two groups of the bacilli found in human tuberculosis is not the whole question.

Group III. (Six Cases Examined.)

The investigation of two viruses shows that bacilli are obtainable from cases of human tuberculosis which belong to neither group. The bacilli from the two viruses mentioned showed an irregular virulence in calves and rabbits, and one of them showed also (1) that the culture of the original material lost its virulence after prolonged subcultivation and (2) that the original virus although irregularly virulent for calves became highly and uniformly virulent after being passed through a calf. The culture obtained from the original material has in cultivation the characters of the bacillus of bovine tuberculosis, belonging to Grade II. There was no evidence of mixture in the case of either virus.

The results of the examination of the bacilli in the case of these two viruses points to the conclusion that the bacilli were bovine in origin and had been altered by residence in the human being.

It should be added that detailed accounts of the whole of the work referred to in the above summary, as well as of other matters dealt with in the Commissioners' report, are about to be issued in separate appendix volumes, which are certain to constitute a most valuable store of information. We comment elsewhere on some immediate administrative considerations which arise out of the important work which the late Sir Michael Foster and his colleagues have completed. But we may add that no reader of this report can fail to realise the advantage to the public health of the country which is likely to be secured as the further lines of inquiry indicated by the Commission are developed.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A COMITIA was held on Jan. 31st, Sir RICHARD DOUGLAS POWELL, Bart., K.C.V.O., the President, being in the chair.

The following gentlemen having passed the required examination were admitted Members of the College:—Alfred Edward Barnes, M.B. Lond.; Dudley William Carmalt-Jones, M.A., M.B. Oxon., L.R.C.P. Lond.; Alfred Charles Coles, M.D. Edin.; George Alexander Finlayson, M.A., M.B. Aberd.; Frederick Lucien Golla, M.A., M.B. Oxon.; George Hall, M.D. Lond., L.R.C.P. Lond.; Frederick William Higgs, M.B. Lond.; Walter William Moore, M.B. New Zealand, L.R.C.P. Lond.; and Owen Thomas Williams, M.D. Lond., L.R.C.P. Lond.

Licences were granted to 83 gentlemen who had passed the required examinations.

Diplomas in Public Health were granted jointly with the Royal College of Surgeons of England to the following gentlemen: Alexander Gray Banks, M.D., Ch.B. Glasg.; Harold Graves Bennetts, M.B., C.M. Sydney; Woodley Daniel Betenson, L.R.C.P. Lond., M.R.C.S. Eng.; Breadalbane Blacklock, M.B., Ch.B. Edin.; Robert Bruce Ferguson, M.D., B.C. Cantab., L.R.C.P. Lond., M.R.C.S. Eng.; Captain James Henry Hugo, I.M.S., D.S.O., L.R.C.P. Lond., M.R.C.S. Eng.; Captain Sydney Price James, I.M.S., M.D. Lond., L.R.C.P. Lond., M.R.C.S. Eng.; Major Alfred Ernest Conquer Keble, R.A.M.C., L.R.C.P. & S. Irel.; Captain Percy John Probyn, R.A.M.C., D.S.O., L.R.C.P. Lond., M.R.C.S. Eng., M.B., B.S. Lond.; Major Oliver Long Robinson, R.A.M.C., L.R.C.P. Lond., M.R.C.S. Eng.; Alfred George Patrick Thomson, M.B., C.M. Edin.; and Captain Arthur Lisle Ambrose Webb, R.A.M.C., L.R.C.P. Lond., M.R.C.S. Eng.

The PRESIDENT announced that Dr. Frederick Taylor had been appointed Harveian orator for 1907, Sir James Barr, Bradshaw lecturer for 1907, and Dr. J. W. H. Eyre Milroy lecturer for 1908.

The following communications were received: 1. From the dean of the medical department of the Johns Hopkins University, Baltimore, thanking the College for books presented to its library. 2. From the secretary of the Royal College of Surgeons of England, reporting proceedings of the Council on Dec. 13th, 1906, and Jan. 10th, 1907. 3. From the secretary of the Liverpool School of Tropical Medicine, dated Dec. 12th, 1906. 4. From the organising committee of the Second International Congress on School Hygiene, petitioning for a grant in aid of the expenses of receiving the Congress in London in August, estimated at more than £3000. It was resolved that the College could not depart from the customary practice in matters of this kind—namely, that no funds are at its disposal from which a financial contribution can be given to any congress, even of a purely medical character. 5. From Professor J. Marshall Lang, Chancellor and Vice-Principal of the University of Aberdeen, thanking the College for the congratulatory address on the occasion of the quater-centenary celebration of the University and presenting certain volumes to the College. The thanks of the College were ordered to be given to the University for the gifts.

Dr. T. R. Glynn, Dr. C. E. Beevor, Dr. G. Newton Pitt, Dr. R. Percy Smith, and Dr. T. H. Green were elected councillors for the ensuing year.

On a proposition moved by Dr. NORMAN MOORE it was resolved that a committee should be appointed to consider the question of the publication of Harvey's manuscript, "De Musculis," in the same form as his "Prelectiones Anatomiæ Universalis" published by the College in 1886.

Dr. F. H. CHAMPNEYS was re-elected a representative of the College on the Central Midwives Board for one year from April 1st next.

A report was received from the committee of management, dated Dec. 17th, 1906, approving of the scheme for an extension of the course of instruction at the Liverpool School of Tropical Medicine, so far as the scheme related to the subjects of tropical medicine, tropical surgery, and tropical hygiene.

After some further formal business the PRESIDENT dissolved the Comitia.

MEDICINE AND THE LAW.

American Law of Insanity in Relation to Crime.

THE trial now proceeding of Henry Thaw for the murder of Stanford White, owing to the line of defence that has been indicated, makes the American law of insanity in respect to crime interesting to all jurisprudents. In the United States we find the greatest divergency of opinion. There may be said to be a tendency towards leaving the question more to the discretion of the jury than it is under the English rule. In some of the States the question is left to the jury in a general way as to whether the insanity caused the crime; in others the prisoner's knowledge of right and wrong is made the test as in England; while in still others the test of the knowledge of right and wrong is coupled with an inquiry as to the power of the prisoner to control his actions. These three classes, of which the first is probably increasing, form a fair division of the different States. The right and wrong test may be said to prevail in New York in spite of some decisions which go further in recognising "moral insanity" so called. The same rule prevails in California, New Jersey, Wisconsin, Missouri, Tennessee, Texas, Alabama, Virginia, Louisiana, North Carolina, Maine, Georgia, Mississippi, Delaware, and Nebraska. To the test of a knowledge of right and wrong is added an element of the power of the accused to control his acts and to apply his sense of the moral nature of his acts in Massachusetts, Pennsylvania, Ohio, Iowa, Minnesota, and Kentucky. The question of the prisoner's responsibility is left in broad general terms to the jury in Illinois, Indiana,

Kansas, Michigan, and New Hampshire. The United States courts in general have adhered to the test of a knowledge of right and wrong. It appears that in 16 States the accused is held responsible if he knew what he was doing and knew it to be wrong; in five States the question is left to the jury as to whether the insanity was the efficient cause of the crime; and in six States the test is whether he had sufficient power to control his action and knew that it was wrong. There is a concurrence in the law of civilised countries in absolving persons mentally unsound from criminal responsibility. In France, Germany, and Austria the rule is in substance that if a person is unconscious of the nature of his act, or his will is affected, or the character of the act is not perceived, there is no crime. That insanity in some of its forms annuls all criminal responsibility and in the same or other forms disqualifies its subject from the performance of certain civil acts is a well-established doctrine of the common law both of England and America. In the application of this principle there has prevailed for many years the utmost diversity of opinion. The common law of America is inherited from this country. The law of England as to the criminal responsibility of the insane has passed through several stages of development. The views of Coke and Hale who wrote at periods when a scientific classification of the various forms of insanity was practically unknown were of a somewhat crude description. Both agreed that the act of a madman should not be imputed to him. It was in 1843, on the trial of Daniel Macnaghten for the murder of Mr. Edward Drummond, the private secretary of Sir Robert Peel, that there was substituted for the "abstract right and wrong" theory the question whether the accused knew the nature and quality of the particular act with the commission of which he was charged at the time of committing it. The House of Lords took the opinion of the judges on the whole question and the law of England as to the criminal responsibility of the insane is now nominally embodied in the judges' "answers," which were adopted by the House of Lords after a debate and which are known as "The Rules in Macnaghten's case." Practically they amount to the following propositions: (*a*) Every man is presumed to be sane till the contrary be proved. (*b*) To establish a defence of insanity it must be clearly proved that at the time of committing the act the accused was labouring under such a defect of reason as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing wrong. (*c*) An insane delusion is a defence to a criminal charge only when the imaginary facts would, if really existent, be a legal justification. For example, A kills B under the delusion (1) that B had slandered him; and (2) that B is trying to kill him. In the former case A is, and in the latter he is not, guilty of murder. The rules in Macnaghten's case have been most adversely criticised. It has been argued that the rules afford no guidance as to how cases of what is called "moral insanity"—in which the character of a person is suddenly changed for the worse or is by nature insanely perverted—should be dealt with; and attention has been called in connexion with the doctrine of partial insanity to the incongruity of supposing that a man who is admittedly subject to an insane delusion can reason sanely upon that delusion and calmly argue with himself as to the extent to which he ought to allow it to influence his action. The test laid down in Macnaghten's case has been generally adopted in America, though with frequent variations. In Coleman's case, in New York, Mr. Justice Davis charged the jury that the "test of the responsibility for criminal acts, when insanity is asserted, is the capacity of the accused to distinguish between right and wrong at the time and with respect to the act which is the subject of inquiry." He left it to the jury to determine "whether or not at the time the accused committed the act she knew what she was doing and knew that in shooting him she was doing a wrongful act." With variations of expression this is the prevailing doctrine of the American courts. In the Guiteau case the jury were charged by Mr. Justice Cox on this subject as follows: "An insane delusion is never the result of reasoning and reflection. It is not generated by them and it cannot be dispelled by them. ..... Whenever convictions are founded on evidence, on comparison of facts and opinions and arguments, they are not insane delusions. The insane delusion does not relate to mere sentiments or theories or abstract questions of law, politics, or religion. All these are the subject of opinions which are beliefs founded on reasoning and reflection. These opinions are often absurd in the extreme and result from naturally weak or ill-trained reasoning powers, hasty conclusions from insufficient data, ignorance of men and things, credulous dispositions, fraudulent imposture, and often from perverted moral sentiments. But still they are opinions founded upon some kind of evidence and liable to be changed by better external evidence or sounder reasoning. But they are not insane delusions" (10 Fed. Rep. 161). In Roger's case (7 Metc. 560) the jury were directed to consider, in addition to the test of right and wrong, whether the prisoner in committing the homicide acted from an irresistible and uncontrollable impulse, and this case has been much relied on in American courts.

"*Faked*" *Photographs.*

Attention has been attracted by a recent verdict at which a special jury in the King's Bench Division arrived under the guidance of Mr. Justice Darling. The action was brought by an actress in respect of certain of her photographs, and the process to which these photographs had been submitted can be described in no other way so well as by the slang adjective which we have employed. The head of the lady's photograph had been removed from genuine photographs of the lady and reproduced in "picture postcards" imposed upon bodies which did not belong to her, so that she appeared in one in a nightdress, in another emerging from a shell, and in various costumes and positions which to say the least were undignified. There was no question as to copyright. The plaintiff had allowed herself to be photographed under such conditions that the copyright in her portrait did not belong to her, and whoever had acquired it had parted with it to the makers of the postcards, so she sued for libel. It is an age of advertisement and a good many professional men whose eminence as such causes them to be regarded as "public characters" appear not to object to having their likenesses paraded in shop windows and sold for a few pence. Indeed, it may be said that, as a profession, medical practitioners alone refuse to lend themselves to this useless and stupid pandering to public curiosity. If anything were required to demonstrate the wisdom of such a course of conduct, or to show the dangers to which those expose themselves who adopt any other, the fate of the actress in the case referred to would supply an excellent example. There were considerations connected with the wearing of stage costume and other matters which the judge and the jury seem to have looked upon as justifying and excusing the "faked photographs" in which her features appeared, and, moreover, she had not been content with the defendants' offer to withdraw them and to apologise. Points not altogether dissimilar might, however, be raised at almost any trial of the kind, and there is nothing to show that a distinguished surgeon who had parted with the copyright in his own photograph and allowed it to be sold as that of a "celebrity" might not see himself depicted in a variety of ridiculous positions and yet find that a jury refused to consider him as libelled. A "faked photograph" of such a gentleman at the supposed bedside of a distinguished patient who in like manner had permitted his portrait to become an article of commerce might be extremely attractive to the public but would not be a gratifying object to see in circulation. If, however, we regret the recent verdict from a feeling of sympathy with a plaintiff to whose success in her profession the publicity of her photographs no doubt contributes, we cannot help thinking that it ought to serve as a warning to those whose circumstances are different. The medical profession, as we have suggested, scarcely needed to be warned. Many members of that profession, however, which practises in the courts in which the verdict under discussion was arrived at, appear to permit a wide circulation of their portraits of which their predecessors more strictly under the influence of the traditional etiquette which forbids advertisement would have highly disapproved.

Southern v. Lynn Thomas and Skyrme.

The solicitor to the plaintiff in the case of Southern *v.* Lynn Thomas and Skyrme has been served with notice to the effect that the appeal which had been entered with a view to setting aside the verdict returned when the case was tried in London before Mr. Justice Bigham and a special jury will not be proceeded with. It will be remembered that the verdict was for £100 and costs.

Prescribing Druggists.

An inquest held recently by Mr. Troutbeck at Wandsworth

on the body of the child of an Irish labourer afforded another instance of an objectionable and dangerous practice. The father, finding that his child was suffering from what he took to be a cold, consulted a druggist who recommended a compound which he sold at 7½*d.* a bottle under the name of "tussodyne." After the child had died he was found to have suffered from diphtheria and the coroner's jury returned a verdict of "Death from natural causes." Mr. Troutbeck made some forcible observations to the jury upon the danger attending such conduct as that of the druggist, pointing out to them that the training of such a person was directed towards enabling him to dispense drugs, not to treat illness, and expressing the belief that to call attention as publicly as possible when fatal results ensued was the only way to check the dangerous practice of going to the druggist for advice as well as for medicine. The price of the nostrum recommended in this case (7½*d.*) indicates the presence of the Government stamp which to the uneducated mind denotes an official guarantee of the efficacy of the compound which it accompanies.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8550 births and 6097 deaths were registered during the week ending Feb. 2nd. The annual rate of mortality, which had been equal to 18·1 and 18·2 per 1000 in the two preceding weeks, further rose to 19·8 in the week under notice. During the first five weeks of the current quarter the death-rate in these towns averaged 19·8 per 1000, the rate during the same period in London being 20·6. The lowest annual death-rates in the 76 towns during last week were 9·7 in King's Norton, 11·6 in Hornsey, 11·7 in West Hartlepool, and 11·9 in Handsworth; the rates in the other towns ranged upwards to 25·8 in Preston, 28·6 in Tynemouth, 30·0 in Swansea, and 31·8 in Middlesbrough. The 6097 deaths in the 76 towns showed an increase of 513 upon the number in the previous week, and included 450 which were referred to the principal epidemic diseases, against 381 and 416 in the two preceding weeks; of these, 144 resulted from whooping-cough, 110 from measles, 77 from diphtheria, 55 from diarrhœa, 36 from scarlet fever, 28 from "fever" (principally enteric), and not one from small-pox. The deaths from these epidemic diseases were equal to an annual rate of 1·5 per 1000 in the 76 towns, the rate from the same diseases in London being 1·4. No death from any of these epidemic diseases was registered last week in Oldham, Northampton, King's Norton, West Bromwich, or in five other of the 76 towns; the annual death-rate therefrom, however, ranged upwards to 4·5 in St. Helens, 4·6 in Middlesbrough, 5·5 in Newport (Mon.), and 5·9 in Warrington. The 144 fatal cases of whooping-cough showed a further increase of 19 upon recent weekly numbers and caused an annual death rate of 1·7 in Willesden, 2·1 in Walthamstow and in Swansea, and 2·2 in Preston. The deaths from measles exceeded those in the previous week by 13, the highest rates therefrom being 2·0 in Devonport, 2·2 in Hull, 3·4 in St. Helens and in Newport (Mon.), and 5·2 in Warrington. Diphtheria showed the greatest fatality in Merthyr Tydfil, Middlesbrough, Derby, and Newport (Mon.). The mortality from scarlet fever and "fever" was considerably below the average, but two deaths from "fever" (probably enteric) were returned in Stockton-on-Tees. No case of small-pox has been under treatment in the Metropolitan Asylums Hospitals since the end of June last. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had steadily declined in the five preceding weeks from 3846 to 3291, had further fallen to 3176 at the end of the week under notice; 319 new cases were admitted to these hospitals during the week, against 325 and 207 in the two previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 446 and 484 in the two preceding weeks, further rose in the week under notice to 515, and exceeded the corrected average in the corresponding week of the last five years by 148. The causes of 63, or 1·1 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Salford, and in 42 other of the 76 towns; the proportion of uncertified deaths, however, again showed marked excess in Birmingham, Liverpool, St. Helens, Sheffield, Barrow-in-Furness, Gateshead, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had steadily declined in the four preceding weeks from 22·9 to 19·1 per 1000, rose again to 20·5 in the week ending Feb. 2nd and exceeded by 0·7 the mean rate in the 76 English towns. The rates in the eight Scotch towns ranged from 13·9 and 15·6 in Greenock and Leith to 23·0 in Glasgow and 24·7 in Paisley. The 712 deaths in the eight towns showed an increase of 50 upon the number in the previous week, and included 85 which were referred to the principal epidemic diseases, against 80 and 71 in the two preceding weeks. These 85 deaths were equal to an annual rate of 2·5 per 1000, which exceeded the rate from the same diseases in the 76 English towns by 1·0; they included 27 which were referred to "fever," 21 to whooping-cough, 17 to diarrhœa, ten to diphtheria, nine to measles, one to scarlet fever, and not one to small-pox. The 27 deaths referred to "fever" showed a further increase upon recent weekly numbers, and included 20 in Glasgow, three in Edinburgh, two in Paisley, and one each in Leith and Aberdeen; 16 of the 20 fatal cases in Glasgow, the three in Edinburgh, the two in Paisley, and the one in Leith were all certified as cerebro-spinal meningitis. The 21 fatal cases of whooping-cough showed an increase of five upon the number in the previous week and included 19 in Glasgow. Of the 17 deaths attributed to diarrhœa nine occurred in Glasgow, four in Edinburgh, two in Dundee, and two in Leith. Seven of the fatal cases of diphtheria were returned in Glasgow and two in Paisley; and the nine deaths from measles included five in Aberdeen and three in Glasgow. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 185, 177, and 134 in the three preceding weeks, further declined to 125 in the week under notice, but exceeded the number in the corresponding week of last year by 12. The causes of 24, or 3·4 per cent., of the deaths registered during the week in the eight towns were not certified or not stated; the mean proportion of uncertified deaths in the 76 English towns during the same week did not exceed 1·1 per cent.

HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 27·5 and 28·6 per 1000 in the two preceding weeks, declined to 24·8 in the week ending Feb 2nd. During the first five weeks of the current quarter the death-rate in the city averaged 28·4 per 1000, the mean rate during the same period being 20·6 in London and also in Edinburgh. The 186 deaths of Dublin residents during the week under notice showed a decline of 28 from the number in the previous week, and included but four which were referred to the principal epidemic diseases, against 11 and seven in the two preceding weeks. These four deaths were equal to an annual rate of 0·5 per 1000 and included two from whooping-cough, two from diarrhœa, and not one either from measles, scarlet fever, diphtheria, "fever," or small-pox. The fatal cases of whooping-cough were fewer by three than the number in either of the two previous weeks. Six inquest cases and four deaths from violence were registered during the week; and 67, or 36·0 per cent., of the deaths occurred in public institutions. The causes of eight, or 4·3 per cent., of the deaths registered in the city during the week were not certified; the percentage of uncertified deaths in the week under notice did not exceed 0·2 in London and was equal to 3·5 in Edinburgh.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeons: H. L. Norris and M. L. M. Vaudin to the *President*, additional, for three months' study at West London Hospital; A. C. Bean, to the *Pembroke*, additional. Surgeons: J. H. Lightfoot to the *President*, additional, for three months'

study at West London Hospital; D. P. Chapman to the *Excellent;* R. Thompson to the *Amphitrite*, on recommissioning; J. C. Bringan to the *Cochrane*, on commissioning; C. T. Baxter, to the *Egmont*, additional, for the *Maine*.

The undermentioned Surgeons have been promoted to the rank of Staff Surgeon in His Majesty's Fleet—viz.: William Ludgate Martin and Sydney Croneen (dated May 13th, 1904); Algernon Carter Bean (dated May 25th, 1905); David Walker Hewitt, Godfrey Taylor, and William Henry Pope (dated Nov. 29th, 1905); George Ernest Duncan (dated May 23rd, 1906); William Wallace Keir (dated Nov. 8th, 1906).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Michael T. Yarr, from the Seconded List, to be Lieutenant-Colonel (dated Jan. 15th, 1907).

The undermentioned Captains to be Majors (dated Jan. 29th, 1907): Lionel F. Smith, Robert J. Blackham, Henry W. Grattan, and John Grech.

Lieutenant-Colonel D. M. Saunders has taken over the duties of sanitary officer in the Irish Command; Major C. J. Healy is posted to Belfast District, for duty at Londonderry; Captain S. M. Adye Curran is posted to the Cork District; Lieutenant E. D. Caddell is posted to the Dublin District, for duty at Dublin.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant Alan Young Greenwood to be Surgeon-Captain (dated Jan. 18th, 1907).

VOLUNTEER CORPS.

Royal Garrison Artillery: 1st Dorsetshire: Surgeon-Major A. Kinsey-Morgan to be Surgeon-Lieutenant-Colonel (dated Dec. 1st, 1906).

Royal Engineers (Volunteers): 1st Cheshire: Surgeon-Captain W. Lawton resigns his commission (dated Jan. 14th, 1907).

Rifle: 4th Volunteer Battalion (Royal Scots) Lothian Regiment; David George Davidson to be Surgeon Lieutenant (dated Dec. 22nd, 1906). 4th (Nottinghamshire) Volunteer Battalion the Sherwood Foresters (Nottinghamshire and Derbyshire Regiment): Surgeon-Lieutenant H. Stallard to be Surgeon-Captain (dated Dec. 27th, 1906). 5th (Glasgow Highland) Volunteer Battalion the Highland Light Infantry; Supernumerary Surgeon-Lieutenant-Colonel Q. Chalmers (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, Highland Light Infantry Volunteer Infantry Brigade) is granted the honorary rank of Surgeon-Colonel (dated Jan. 7th, 1907). 1st Volunteer Battalion the Royal Warwickshire Regiment: Surgeon-Lieutenant W. Allport resigns his commission (dated Jan. 5th, 1907. 2nd Volunteer Battalion the King's (Liverpool Regiment): Surgeon-Major N. E. Roberts is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Mersey Volunteer Infantry Brigade (dated Jan. 1st, 1907). 5th (Irish) Volunteer Battalion the King's (Liverpool Regiment): Surgeon-Lieutenant H. M. Bayer resigns his commission (dated Dec. 15th, 1906). 4th Volunteer Battalion the Devonshire Regiment: Surgeon-Lieutenant-Colonel and Honorary Surgeon Colonel J. R. Thomas is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Devon Volunteer Infantry Brigade (dated June 1st, 1906). 2nd Volunteer Battalion the Lancashire Fusiliers: Surgeon-Lieutenant Colonel and Honorary Surgeon-Colonel C. W. Thorp is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, North Lancashire Volunteer Infantry Brigade (dated June 1st, 1906). 1st (Brecknockshire) Volunteer Battalion the South Wales Borderers: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel P. E. Hill is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, South Wales Border Volunteer Infantry Brigade (dated June 1st, 1906). 2nd Volunteer Battalion the Duke of Cornwall's Light Infantry: Surgeon-Major W. Nettle is granted the honorary rank of Surgeon-Lieutenant-Colonel (dated Jan. 11th, 1907). 2nd Volunteer Battalion, the Prince of Wales's Volunteers (South Lancashire Regiment): Surgeon-Major F. J. Knowles is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, South Lancashire Volunteer Infantry Brigade (dated June 1st, 1906). 2nd Volunteer Battalion the King's (Shropshire Light Infantry): Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel R. de la P. Beresford is borne as supernumerary whilst holding the appointment as Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, North Wales Border Volunteer Infantry Brigade (dated June 1st, 1906). 4th Middlesex (Kensington) Volunteer Rifle Corps: Surgeon-Lieutenant F. R. Miller to be Surgeon-Captain (dated Dec. 20th, 1906); Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel A. Clark is borne as supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, 2nd London Volunteer Infantry Brigade (dated June 1st, 1906). 1st (Ross Highland) Volunteer Battalion, Seaforth Highlanders (Ross-shire Buffs, the Duke of Albany's): Supernumerary Surgeon-Lieutenant-Colonel J. Adam (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Seaforth and Cameron Volunteer Infantry Brigade) is granted the honorary rank of Surgeon-Colonel (dated Jan. 17th, 1907). 7th Middlesex (London Scottish) Volunteer Rifle Corps: Surgeon-Captain J. G. Turner to be Surgeon-Major (dated Jan. 1st, 1907).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Scottish Command: Aberdeen Companies: The undermentioned Lieutenants to be Captains:—J. Smart (dated Dec. 27th, 1906), J. W. Milne (dated Dec. 27th, 1906), and J. D. Noble (dated Dec. 28th, 1906).

INDIAN MEDICAL SERVICE EXAMINATION.

The following 23 candidates have been admitted at the January examinations as lieutenants on probation in the Indian Medical Service:—

Name.	Marks.	Name.	Marks.
W. L. Harnett...	3998	S. C. Chuckerbutty	3017
W. P. G. Williams...	3700	J. A. Cruickshank...	2985
J. D. Sands	3699	D. D. Kamat	2963
S. B. Mehta	3686	W. R. R. Williams...	2927
A. H. Napier	3599	E. D. Simson	2914
G. Holroyd	3575	J. A. S. Phillips	2908
A. E. Griesewood	3527	A. F. Babonau...	2866
D. L. Graham...	3431	P. M. Bennie	2849
E. B. Munro	3395	S. J. Bhathena...	2767
P. K. Tarapore...	3232	H. M. Inman	2758
R. B. Nicholson	3134	F. O'D. Fawcett	2747
G. S. Husband...	3057		

THE RUSSIAN LOSSES DURING THE RUSSO-JAPANESE WAR.

The *Broad Arrow* of Jan. 19th gave the details of the Russian losses by sickness in the late war, and in a second article published in its issue of Feb. 2nd our service contemporary deals with the losses by wounds as given in the *Russki Invalid*. The numbers of killed, wounded, and missing in action as summarised in a grand total are as follows:—

	Officers.	Men.
Killed	678	19 068
Wounded	3840	118,850
Missing	422	39,193
	4940	177,111

According to the proportions per 1000 of the mean effective strength of the army in Manchuria when these have been worked out it would appear that the great majority of losses of all sorts fell to the share of the infantry, cavalry and artillery coming next with much less loss. The loss in officers killed averaged double in proportion to that of the men; in the artillery it was triple, and in the engineers the proportion was eight times as high. The officers wounded were much more numerous in proportion to those engaged than were the men wounded. But as regards missing the ratio was inverse, for only in the cavalry was the proportion of officers greater than that of the men. It may be confidently stated that all these "missing" are, in fact, now dead. The causes of wounds, the parts of the body wounded, and by what weapons are calculated and set forth in elaborately prepared statistics. The *Broad Arrow* concludes its article by saying that the compilation of these statistics shows that great care was devoted to the cases in the Russian hospitals and that the medical and the transport services seem to have fulfilled, on the field of battle, the expectations made from their peace efficiency. This is because those services were generously provided with necessaries and were to a certain extent proportionate in number to the numbers of troops engaged

Correspondence.

"Audi alteram partem."

GAS FIRES.

To the Editors of THE LANCET.

SIRS,—I did not see till a few days ago the letter from Dr. H. A. Des Vœux and Dr. J. S. Owens in reply to mine on gas fires which appeared in THE LANCET of Dec. 15th, 1906, and I trust it is not too late to ask space for a short reply.

Length of the tests.—The authors consider that an eight hours' test for each stove is quite sufficient but admit that within limits a long test is to be preferred to a short one. It seems to me that at least four or five concordant results are needed in each case for a satisfactory test. Many things may occur to affect the draught on one working day and a stove may therefore be approved or objected to on insufficient evidence.

Size of rooms.—The importance of this is admitted. If my room was too small those used by the authors were certainly too large. Let us take an extreme case. Suppose a gas fire were fitted up in Westminster Abbey it would (*a*) neither ventilate the building, (*b*) nor heat it, (*c*) nor produce a smell, (*d*) nor dry the air, (*e*) nor vitiate the air; yet we know that some gas stoves produce all these results. The condition of the rooms was also abnormal Walls of unplastered brick are most unusual; not only would they have a considerable ventilating effect but the fresh mortar would act in absorbing some of the carbon dioxide in the air of the room.

Carbon dioxide.—The authors found a very slight increase in the room above the quantity in the air admitted and they ask why the quantity should be increased if all the products of combustion are carried up the flue. This brings me to a great omission in the Coal Smoke Abatement Society's report. We are not told whether the rooms were empty or inhabited during the tests, whether or not gas was being used for lighting. Obviously there is little use in ventilating uninhabited rooms and inquiries such as we have been engaged in should show not only whether the products of combustion pass up the flue, but also to what extent the carbon dioxide produced by respiration is carried off. It is important also to state from what part of the room the air is tested for carbon dioxide. In my experiments the room was occupied by one or two persons and the time of respiration recorded.

Carbon monoxide.—I agree with the authors. I found no definite indication of the presence of carbon monoxide in my experiments with ordinary gas fires. The presence of that gas when a flueless stove is used is what everyone would expect and it is well that attention has been drawn to the fact.

Potassium permanganate test.—I am glad this test was employed, but in the circumstances the results were not relied on.

Smell.—It does not seem quite satisfactory that there was a smell from the gas fires in 18 cases and none in 12; the proportion seems too high.

Humidity.—My experiments seem to confirm the general impression that the air seems very dry when a gas stove is in use and some makers recommend a basin of water to be placed on the top of the stove. In the case of cooking stoves there is no doubt whatever that the air is rendered excessively dry, but these were not examined in the recent investigation.

In conclusion, I should like again to refer to the complaint made that my room was small and to say, as I have said before, that gas stoves are frequently used in small rooms and gas cooking stoves in still smaller scullieries; also that my tests were *comparative*, the same room being used for gas-fire and coal-fire experiments. Further, as the result of 31 tests I found an increase between morning and afternoon tests of 1 volume of carbon dioxide in 10,000 volumes when coal gas and electric light were in use, but as the results of 39 tests an increase of 6·27 volumes of carbon dioxide in similar circumstances when a gas fire and electric light were in use, and these numerous tests satisfied me that under similar conditions a coal fire is to be preferred to a gas fire.

I willingly bear testimony to the valuable results we have obtained in some respects by the work carried on by Dr. Des Vœux and Dr. Owens, but we must remember that, whatever the amount of carbon dioxide they found in their experiments, it refers to gas fires only and we do not know how much *less* it might have been by using coal fires.

I am, Sirs, yours faithfully,
FRANCIS JONES, M.Sc., F.R.S.E.

Manchester, Feb. 2nd, 1907.

To the Editors of THE LANCET.

SIRS,—With your permission I will briefly reply to the last letter from Mr. Jones. Nine months previous to his strictures on the Coal Smoke Abatement Commission's tests I pointed out to him certain factors which he had not borne in mind when embarking upon his research into this subject. Yet he criticised the aforesaid commission and urged it to continue its tests in *normal* rooms, when the whole of his 15 months' work was done in a room of but 935 cubic feet capacity! The time for private courtesies had then passed, and in fairness to the commission I supplied the information which he in his letter omitted. I believe that information enabled Dr. Des Vœux and Dr. Owens to deal more effectually with him than they might otherwise have done. I am quite content to let him be judged upon the facts as they *now* appear either in the correspondence or in his pamphlet.

Mr. Jones reiterates that the "stove worked perfectly well." Why, then, did he find the percentage of carbonic acid higher in the room when it was in use than when the coal fire was in use? If it worked perfectly well the carbonic acid would undoubtedly be carried away up the flue. His tests are unreliable because: 1. They were all taken in a room far below normal conditions. 2. In every case a higher proportion of gas was used for lighting and heating than was necessary for the satisfactory lighting or heating of the room. 3. Only *one* gas fire was used throughout the tests. Any defect in this particular stove would nullify the whole of the observations taken.

The fact that Mr. Jones got a higher percentage of carbonic acid in the room with the gas fire than with the coal fire is conclusive proof that either the stove was defective or badly fitted, and no other evidence is necessary. Anyone who understands the subject knows that with a stove of approved construction and properly fixed the products cannot enter the room unless the flue is deficient.

I am, Sirs, yours faithfully,
Longwood, Jan. 22th, 1907. JNO. HY. BREARLEY.

MEAT DIET AND THE TEETH.

To the Editors of THE LANCET.

SIRS,—My contention that the tooth germ shown at the meeting of the Pathological Society on Dec. 18th was not normal in appearance is confirmed by Mr. J. H. Gibbs's letter, but he informs me that the abnormal appearances are artifacts, due to the method of preparation. I accept his explanation fully, but can, I think, hardly be blamed for forming an opinion upon the specimen which was shown to the meeting. I can sympathise with Mr. Gibbs in his histological difficulties, especially in the use of a paraffin method which is unsuitable for any but very young tooth germs. I should like to venture to recommend to him one of the methods of preparing dental tissues described by Dr. A. P. Beddard and myself in the Transactions of the Odontological Society of Great Britain for 1902, Volume XXXV., the employment of which would enable him to avoid such appearances as the one that misled me. Some years' experience of these methods has convinced me that a large number of good sections of decalcified dental tissues can be obtained by their use in skilled hands.

Under these circumstances, Dr. Chalmers Watson must excuse me if I hesitate to draw further conclusions from his specimens, as he asks me to do in the last part of his letter. I accept, of course, Dr. Watson's statement that before the meeting of the Pathological Society he was alive to the possibility of his results being in part due to a deficiency of inorganic material in the diet of his animals, though it gives rise to new difficulties. If he had by chance overlooked this possibility, as I had gathered from reading his papers in the Transactions of the Royal Medical and Chirurgical Society, Volume LXXXVII., and in THE LANCET of Dec. 8th and 29th, 1906, it was only natural that he should proceed to apply his conclusions to human dietetics. But since he was aware that the results, or a part of them,

might be due, not to meat as such, but simply to the want of other necessary elements, deficient under the conditions of his experiments, but not deficient in an ordinary mixed diet, and aware that in this respect the experiments were possibly a repetition of the classical ones of Chossat, Förster, and others, it is remarkable that Dr. Chalmers Watson should have ventured freely to apply the results to man, without having either mentioned or excluded this possible fallacy.

Dr. Watson is quite right in supposing that the main part of my remarks at the Pathological Society referred to the bone changes.

I regard the experiments with great interest and do not wish to minimise their value, but hold that, until the causation of the results is more exactly known, their application to modern human dietetics is unjustifiable, and discussion fruitless. I am, Sirs, yours faithfully,

London, W., Feb. 4th, 1907. EDMUND I. SPRIGGS.

To the Editors of THE LANCET.

SIRS,—There is one fact which points to the conclusion that the deficient assimilation of lime has some effect in determining early caries. The teeth in children who are the subjects of rickets are not only late in erupting but also undergo early decay. In this disease we know that the bones are soft from a deficiency of lime salts, and it would appear probable that the early dental decay may be associated with a similar deficiency of lime salts in the teeth.

I am, Sirs, yours faithfully,

Nottingham, Jan. 29th, 1907. F. H. JACOB.

MILK IN SMALL GENERAL SHOPS.

To the Editors of THE LANCET.

SIRS,—Some years ago when at Surbiton I was called to see a young lady living in a good house who was suffering from diphtheria. I carefully examined the various pipes, traps, water-supply, &c., but could find nothing to account for its occurrence. On leaving the house I met the medical officer of health and told him about the case and my suspicions. When I gave him the name of the dairy he altogether discountenanced my suspicions, saying he knew the persons who kept it and that they were particularly careful and clean. However, as we parted he was met by the rural medical officer of health and asked by him to see two cases of diphtheria which had broken out in a very large house on the hill. After seeing these cases he inquired as to the dairy from which the milk-supply was obtained and when he found it to be the same as the one mentioned by me the two medical men at once visited the dairy in question and found the woman who served the milk nursing a girl who had been brought down from London suffering from diphtheria in a room adjoining the shop. The selling of the milk was at once stopped and no other case of diphtheria arose. Such a thing as this would never have occurred in a large well-ordered business. I may add that the whole credit of discovering the cause in this instance was awarded to the medical officer of health.

I am, Sirs, yours faithfully,

Bexhill-on-Sea, Feb. 2nd, 1907 F. P. ATKINSON.

MEDICAL LAW REFORM AND QUACKERY.

To the Editors of THE LANCET.

SIRS,—Will you allow me to bring forward in your columns the suggestion I have already published—namely, that the united efforts of the profession should be directed towards promotion of a Royal Commission to inquire into the whole subject of medical law, into the practice of the profession by unqualified pretenders, and into the trade in quack medicines? I would urge the following brief statements in support of my proposition. To justify them fully would occupy some pages of your space; they will not, I believe, be disputed by anyone having adequate knowledge of the question. The profession is entitled to at least the same amount of protection as the law affords to solicitors. It is impossible for an unqualified person to practise with impunity as a solicitor, to assume false titles, or to use language in writings or advertisements implying even remotely that he is legally qualified. It can be proved that similar protection of the medical profession, whilst improving the status of the practitioner, would confer incalculably greater advantages upon the public and especially upon those classes—the weak, the simple, the suffering—who have most claim upon the protection of the State. It would be impossible to legislate effectually against fraudulent practice without dealing at the same time with the traffic in quack medicines. The two trades are inseparably bound up together. It can be demonstrated that the quack medicine trade constitutes a gigantic system of cynical fraud and forms a powerful factor in deterioration of the public health. Very slight modification of existing laws would insure prosecution of most quack medicine proprietors for obtaining money under false pretences and would render amenable newspapers that published their advertisements. Almost complete ignorance of the whole question prevails among the public and among Members of both Houses of Parliament, whilst great prejudice against the profession exists among sections of the public and among certain loud-voiced parties in Parliament. It is impossible that any satisfactory project of medical law reform can obtain a hearing unless taken up by Government. It is extremely improbable that any Bill could be carried without the support of the party in power as well as of the Cabinet and equally improbable that any Government would concern itself with medical reform unless Parliament and the public were first enlightened with regard to the extent of existing evils. The desired enlightenment can be brought about through the medium of a Royal Commission and in no other way. Quackery—always including the quack medicine trade—now forms the favoured because safe pursuit of a large section of the vast army of clever cynical tricksters parasitic upon modern society. They command large capital and have virtually suborned almost the entire newspaper press either to support them or to remain neutral. With rare exceptions the papers all, from high to low, accept a share of the vast sum, much more than a million sterling annually, disbursed in quack advertisements. No editor dare attack quackery. He can never be certain that a puff, in the form of editorial matter, in praise of an infamous impostor and in disparagement of the profession may not be inserted by his manager in juxtaposition with his article. The story of villainy which could be disclosed before a Royal Commission would astonish and horrify the educated public. It would bring shame to newspaper proprietors, and some of them, perhaps induced by noble lords who own leading papers, might turn away from abetting a nefarious traffic and give their support to medical reform. Whether successful at first or not the Commission would provide a body of conclusive evidence in favour of the legislation demanded, and if this did not in the end lead to provision of the necessary new laws it would be only because the case was for other reasons hopeless. The political influence of the profession as a body is deplorably small, but if properly directed would suffice to achieve the preliminary step which I advocate. Until this step be gained all other effort in the desired direction must prove futile.

I am, Sirs, yours faithfully,

London, W., Jan. 26th, 1907. HENRY SEWILL.

CHILDHOOD SOCIETY AND THE BRITISH CHILD-STUDY ASSOCIATION.—A course of lectures and discussions has been arranged by the Childhood Society and the British Child study Association to be delivered in the Parkes Museum, Margaret street, London, W., at 8 P.M., on each Thursday up to March 21st. Members and Associates of the two societies will be admitted free of charge; others can attend the lectures by payment of 2*s*. 6*d*. for the course or 6*d*. for a single lecture. For tickets, applications should be made either to Mr. W. J. Dun-le Mulford, secretary of the Childhood Society, Parkes Museum, or to Kate Stevens, secretary of the British Child-study Association, Carlisle House, Dartmouth-park-hill, London, N.W. The next lecture will be delivered by Dr. StClair Thomson on Feb. 14th, the subject being the Care of the Throat, Nose, and Ears in Children. The titles of the subsequent papers and the names of the readers will be as follows: on Feb. 21st, Brain Development through Play, by Mr. J. Arrowsmith; on Feb. 28th, Mental Training in Childhood, by Dr. Robert Jones; on March 7th, Games and Athletics in America, by Mr. T. G. Tibbey; on March 14th, Physical Training in Relation to Fatigue, by Dr. R. J. E. Hanson; and on March 21st, there will be a discussion on Children's Ideal of a Day's Outing.

GERMAN MUNICIPAL ABATTOIRS.

A VISIT TO THE FRANKFORT AND HOMBURG SLAUGHTER-HOUSES.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

GERMANY stands first among nations for its public slaughter-houses. This is a notorious fact and all students on the subject feel that their education is not complete if they have not visited some of the model German slaughter-houses. But it was not always so. Indeed, a century ago there was more to learn in France than in Germany so far as this special subject is concerned. It is true that there were public slaughter-houses in Germany long ago. For instance, the text of a law still exists, dated 1276, abolishing private slaughter-houses at Augsburg, and a similar law exists at Kegensburg dated 1376. Municipal slaughter-houses existed in the fourteenth century at Hamburg, Strasburg, Zwickau, and a little later at Dantzic, Leipsic, Liegnitz, and Nordhausen. Berlin and Breslau did not have public slaughter-houses before the sixteenth century. But if these were municipal slaughter-houses they certainly were not sanitary slaughter-houses. Indeed, several severe epidemics were necessary before the public and the authorities in Germany realised that the providing of meat was not merely a commercial matter, but that it is first and foremost a public health service. In "Les Abattoirs Publics," the work by J. de Loverdo and M. Martel, to which I have already alluded, the chapter on Germany gives some figures in regard to these epidemics. Thus there were 160 cases and 28 deaths from trichinosis at Hettstadt in 1864–65; more than 300 cases at Hanover and 337 cases with 101 deaths at Hedersleben. From 1860 to 1889 there were altogether 105 epidemics with a total of 3402 cases of trichinosis. Then in 1866 there were 70 cases and three deaths due to poisoning from meat at Lahr; 27 such cases and one death in 1867 at Flemtern. At Nordhausen in 1876, when that town had not yet built a public slaughter-house, 400 cases of illness and one death were attributed to unwholesome meat. Armed with such figures, societies of medical men, of veterinary surgeons, of sanitary reformers and other bodies agitated for legislation on the subject, with the result that the law of March 18th, 1868, was enacted, rendering the construction of public slaughter-houses obligatory throughout Prussia. Nevertheless, the law at first remained a dead letter. Six years later two towns, Solingen and Liegnitz, had public slaughter-houses and in 1880 there were but ten modern model public slaughter-houses.

On May 9th, 1881, regulations were issued in regard to the sale of meat coming from rural districts, which rendered the construction of abattoirs by the municipalities a matter of greater necessity. It is from that date that the movement in favour of municipal abattoirs really prospered. In "Les Abattoirs Publics" I find it stated that in 1903 there were 839 localities in Germany which possessed public slaughter-houses. In the course of a quarter of a century Germany has overtaken France in regard to the number of its public abattoirs and greatly surpassed France in regard to the sanitary merits of these institutions. Many more abattoirs are in course of construction in all parts of Germany. The German law is peculiar and the result might seem alarming to persons who think that where the ratepayers' money is concerned economy should be the first object. The great advantage of the German law is, on the contrary, that it leads German municipalities to spend the largest justifiable and possible sum in the building of their abattoirs. Each municipality is allowed to charge whatever tax or rent it may deem expedient to those who make use of the slaughter-house. On the other hand, however high these charges, extensive the business, and large the revenue, the municipality is not allowed to keep more than the equivalent of 8 per cent. interest on the capital expended. If the profits exceed 8 per cent. all that is received above this interest must be paid over to the national exchequer. In these circumstances there is nothing to be gained for the local revenues in adopting cheap methods. Most localities prefer to apply every possible sanitary improvement. Perhaps in this law we have a very simple, but a very certain, method of protecting the food-supply. No more than 8 per cent. profit on the invested capital is allowed. There is, therefore, no temptation whatsoever to do things cheaply, and hence the German abattoirs are the model abattoirs of Europe. For instance, that of the town of Offenbach will be found mentioned in the text-books. This town has only 60,000 inhabitants and yet it spent £100,000 on its abattoir, which is equal to about £1 13*s.* 7*d.* per inhabitant.

At first a few private companies and some syndicates of butchers attempted to build public slaughter-houses. This was notably the case in the kingdom of Saxony, where out of 31 abattoirs only 13 belonged to the municipalities. In Bavaria, on the other hand, there is only one abattoir that does not belong to the municipality. In Alsace-Lorraine some municipal abattoirs have been leased to private enterprises and this is also the case at Hanover, Dresden, and Stuttgart, but for these last three towns the lease will terminate in a few years and the abattoirs will return to the municipalities. At Dresden the erection of a new and a better abattoir is to be completed this year (1907) and compensation to the amount of £22,480 will be paid to the company now in possession, so that it may close and abandon the actual and inferior slaughter-house. The municipality of Hanover will also resume possession of the cattle-market and the slaughter-house in 1909; while the town of Stuttgart has voted a credit of £175,000 to build a model municipal slaughter-house to replace the abattoir now owned by a private enterprise. Altogether, out of the 839 slaughter-houses existing in 1903, only 40 were not municipal property. The largest number of abattoirs are in Prussia—namely, 422, and 18 of these belonged to syndicates of butchers and four to private companies. Thus it may be said that henceforth the creation of public slaughter-houses in Germany is purely a matter of municipal enterprise. The few abattoirs that do not belong to the municipalities are being bought out and are destined to disappear at an early date.

By the side of this record of German public enterprise the chapter devoted to England is brief and but sorry reading. To begin with, there is no special British law on the subject, only clauses in the Public Health Act of 1875, and paragraph 169 which allows municipalities to build an abattoir but in no wise compels them to do so, as is the case in Germany. Nor does the English law stipulate that private slaughter-houses shall be abolished when a public abattoir has been constructed. Thus in "Les Abattoirs Publics," by the side of the 839 German towns, there is mention of only 84 out of 1083 British towns that have public abattoirs, and of these latter not more than 42 have abolished private slaughter-houses. Thus where in Great Britain we have succeeded in ridding one town of the nuisance and danger of private slaughter-houses in Germany 20 towns have been so dealt with.

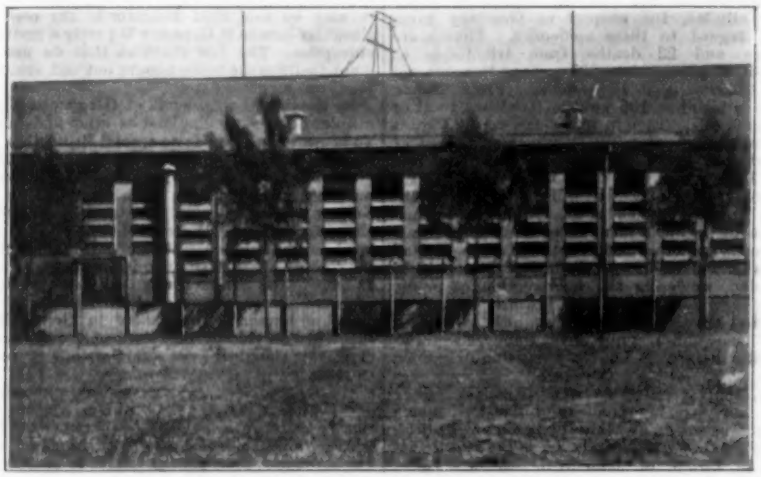
When last in Germany I visited the abattoirs of Frankfort-on-the-Main and Homburg. As Frankfort has now a population of close upon 200,000 inhabitants the former abattoir is important, and the latter is instructive as showing what can and ought to be done at health resorts such as Homburg. On entering the Frankfort abattoirs, a visitor fresh from the Chicago stockyards would be impressed by the fact that no building has more than one floor, though some have a basement. The abattoir is situated at the eastern extremity of the town and on the banks of the river Main. Also those buildings which overlook the road or embankment separating the abattoir from the river, and where there is a certain amount of general traffic, are used as stables and not for killing purposes. While there is no special fault to find with these stables, as they have end-to-end through ventilation, it cannot be said that they are in any way model stables. In the centre of the grounds there are better stables. These have electric light at night and what is known as "realist" ceilings—that is to say, the intervals between the rafters are arched in solid materials and there is no vacant space between the ceiling and the roof or floor above. Here and in connexion with the cattle market are some other buildings intended for the smaller animals—sheep, goats, and hogs—where there is stabling in the basement as well as on the ground floor. These buildings are surrounded by a broad area which is reached not by steps but by an inclined plane. Thus, the animals can walk up and down and the air circulates around freely. Nevertheless, this basement stabling is only used when there is an extra pressure. Everywhere the inside floors are of asphalt and watertight. On all sides there are louvre windows and every facility for establishing through draughts. For the large or horned cattle there are some magnificent glass and

iron roof structures where 2000 animals can be sheltered and exposed for sale. There are louvred windows on both sides of these long buildings. The floor is covered with a mixture of gravel and asphalt, slanting and draining into numerous gullies. All the doors, gates, and partitions are of metal. The doors slide backwards and forwards on rails and do not swing on hinges. The gates can open at both ends and are fastened by very simple but strong latches. Strength, security, promptitude, and absolute cleanliness and simplicity are the principles governing the construction of all the fittings. The hog market, which has also a basement floor, is very large and there are no wooden partitions; the troughs are made of granite and in some places the flooring is of granite flagstones cemented together. It is all water-tight and easily scoured out with the fire-hose.

The site of the abattoir is of oblong shape. The northern length is bordered by the embankment and river, and the southern side by the railway. The railway lines not only serve as a demarcation, but they also separate the quarantine department from the general abattoir and cattle market. On the other side of the railway lines are two buildings, one for the hogs and the other for the cattle that are ill. There are stables where animals may be kept in quarantine and under careful observation. Then there is a very lofty slaughter-house, with louvre windows on each side, and a lantern-shaped summit to the roof containing further openings for ventilation purposes. The floor and the walls to a height of seven feet are cemented and here the unhealthy animals are killed, well away from the general abattoir. The railway station, which separates the quarantine stables and slaughter-house from the cattle market and general abattoir, is itself a model of sanitation. The platforms are in all about a thousand metres in length. They are cemented and slant upwards towards the railway line so as to reach the level of the floor of the railway wagons. Thus the cattle can step out without difficulty and walk down between iron railings to their stables. Wherever they tread, whatever they touch, being cemented or of iron, is therefore non-porous, and easy to wash and to disinfect. Thus the sheep or cattle cannot readily infect each other.

In regard to the slaughtering there is one old building which has been preserved mainly for the purpose, it would seem, of showing how not to do it. It is a low building, rather sombre, and with many columns, vaguely recalling the Cordova mosque minus the art and the arabesques. The veterinary surgeon who kindly took me round could only explain this anachronism by saying that it served as a comparison with improved modern methods, was not often used, and would probably soon disappear. The horned cattle are slaughtered in large buildings and not in small private compartments. Here the pavement is of cemented granite flag-stone. The buildings where the slaughtering is done look more like vast glass halls or semi-crystal galleries that might easily be converted into winter gardens. In contemplating these lofty, bright, light, clean buildings I could not but recall an article in *Collier's Magazine*. Here Major L. L. Seaman, M.D., LL.B., in attempting to apologise for the Chicago stockyards, said that abattoir work "in no way relates to or has any correlation with an art gallery or with any other of the refinements of civilised life." A visit to the Frankfort abattoir would triumphantly refute this statement. Should the business of slaughtering be removed to some other locality and the site converted into pleasure grounds some of the existing buildings might well serve for various sorts of exhibitions. Then it is precisely in the preparing and handling of food that the science and refinements of civilised life should be applied. Thus at the Frankfort abattoir there is wonderful freedom from bad odours. Anything that might occasion a bad odour is promptly washed away to the nearest gully and then into the sewer. The men employed all looked cheerful, healthy, and scrupulously clean. Such a thing as an accumulation of dust or of dirt, or a dark corner did not exist. All is bathed in pure daylight. No tall buildings have been erected, so that there is nothing to make shadows, to block out the purifying light and the direct rays from the sun. On all sides there is an abundance of open space and many trees beautify the broad avenues.

FIG. 1



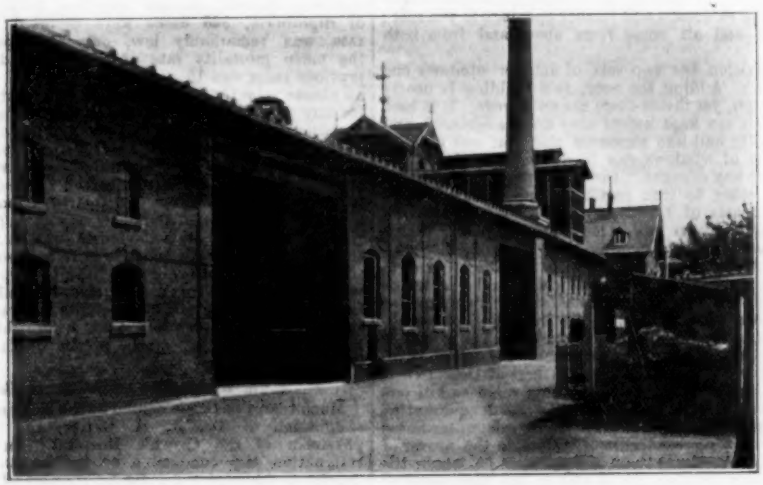
Frankfort. The slaughter-house for horned cattle, showing great expanse of window space, the opening deflecting the air upwards above the heads of the workers within.

Throughout mechanical contrivances render it unnecessary for men to carry carcasses or meat. They are all hooked up and travel by small wheels on overhead lines. As for ventilation, the accompanying illustration (Fig. 1) is a reproduction of a photograph of one of the buildings where the horned cattle are killed; it shows that there is far more window space than there is wall, and this is the same on both sides of the building. The through draught does not, however, inconvenience the workers, for the bottom of the window is some six or more feet above the floor. While the draught is thus overhead the men and animals are kept warm by hot-water coils which are placed all round the walls and near to the floor. It is the same where the sheep and hogs are slaughtered. In the hog-slaughtering places there are great caldrons close at hand in which to scald the carcasses of the hogs so that their bristles may be easily scraped off. Close to this department there is a large hall with windows facing the north in order to secure the best light. Here, at two rows of tables, sit 80 microscopists who examine the four samples of flesh cut from every hog. Only after this microscopic

examination has proved satisfactory is the meat allowed to be sold. In the slaughter-house for sheep there are many thermometers on the walls with apparatus for automatic warming when the temperature falls too low. The hot-water coils give so much heat that it is possible to work in winter with the windows open and thus the air can be kept pure even in the coldest season. For the smaller animals there is on one side of the building a metallic channel or trough a few inches above the ground and against the wall. Into this the contents of the pouches are emptied. It is a sort of gutter or drain with a strong current of water conveying everything quickly to the sewer. Above this are numerous metal tanks or basins in which the smaller intestines are cleaned out. These basins empty into the gutter-like trough underneath and above the basins are taps which supply hot and cold water in abundance. All the dirt is washed away immediately. The tripe and skin dealers work in a separate part of the premises, but I cannot say that I saw anything here that might be considered as an improvement or example. Underground there are extensive cold storage-rooms and also a passage along which the carts that conveys condemned carcasses to the destructor can pass. At a particular part of this passage an empty cart is always waiting. Above a trap door opens and what is to be destroyed is dropped down into the cart. The destructor is at some distance from the abattoir.

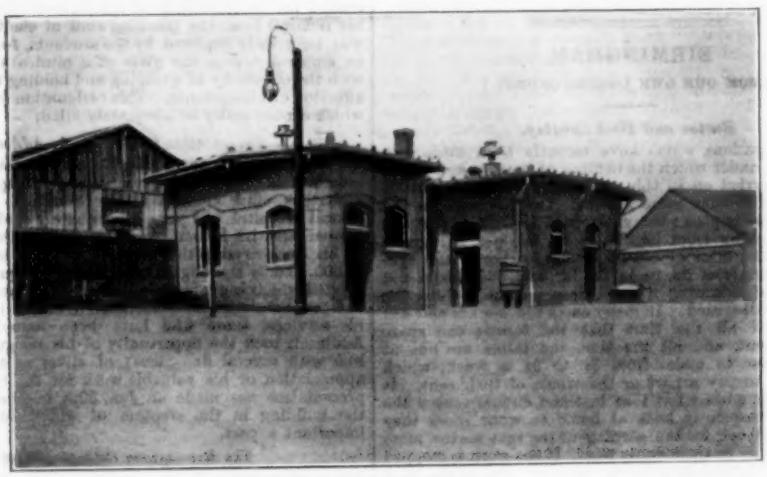
At Homburg there are only about 20,000 inhabitants, but there are now some 14,000 visitors who go each year to reside for a few weeks and to drink the mineral waters. Nevertheless this town, though small, has built a model slaughter-house. It is situated in the open and well away from the town. The building consists of three sections or divisions (Fig 2). The first contains the offices, a residence, and large machinery for generating ice. This is a comparatively lofty building, with a tall water tower. At the back there is a lower portion which contains the cold storage

FIG. 2.



Homburg Slaughter-house. First section: Ice manufactory, residence, cold storage, destructor chimney. Second section: lofty slaughter hall. Third section: stables three storeys high.

FIG. 3.



Horse slaughter-house, Homburg. The quarantine stable and small slaughter-house are behind, at some distance from the general slaughter-house.

rooms and also in a corner is situated a small destructor communicating with a very tall chimney. Nevertheless the gases have to travel under the grate through the fire before they can reach this chimney, so that they should not occasion any nuisance. In the office there was a microscope which magnifies a thousand dimensions and the veterinary surgeon in charge showed me spores of anthrax which he had recently detected.

The next or middle division is the slaughter-house proper. Though the building is at least two storeys high there is no floor inside. Thus there is a lofty hall reaching from the ground to the roof. There are large louvre windows facing each other in the side walls and further openings in the roof; therefore light and air come from above and from both sides.

The third division has two sets of smaller windows one above the other. Adding the roof, this building is nearly three storeys high, yet inside there are no storeys. It is here that the animals are kept before they are slaughtered, and here, in this lofty hall-like structure, they can rest quietly. The higher row of windows can be opened even in winter without causing any draught. Inside the pens are separated one from the other by iron partitions and there are iron gates with two sets of hinges, so that they can open on either side and in either way to let the cattle pass. Where the horned cattle stand the flooring is of granulated cement so as to be watertight and not slippery. A short barrel is affixed against the head of the horned cattle and a cartridge is fired. Thus it is impossible to miss aim. There are also excellent mechanical contrivances for hooking, unhooking, pushing along, and weighing all carcasses. The premises are surrounded by walls and at the back, in a corner, there are two small buildings (Fig. 3). The first of these two is a horse slaughter-house where there is only room to kill one horse at a time. Then there is also a small quarantine stable and next to it a very small slaughter-house for the killing of a diseased animal. Outside the nearer of these two small structures there is a platform on which the manure and other dirt are placed and it can then be tilted into a cart which comes up from a lower level outside the wall and takes away the sweepings and dirt from the slaughter-house. Altogether, and when it is borne in mind that Homburg is but a small town, the construction of such a well-appointed abattoir is greatly to the credit of the intelligence and enterprise of its inhabitants.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Button and Hook Carding.

THE investigations which have recently been made into the conditions under which the carding of buttons and hooks and eyes is carried on in this city show that our authorities will be forced to take some action. The payment for the work is wretchedly poor; the sums paid for sewing buttons on to cards varies from 2*s.* 9*d.* to 6*s.* 8*d.* per 100 gross, according to the class of button, whilst for hooks and eyes the workers earn from 9*d.* to 1*s.* 2*d.* for each 3400 hooks and eyes sewn on to cards. These prices do not include the cotton and needles used. In many cases the mother and her children spend all the time that the former can spare from house work and all the time the latter are not at school in order to make from 3*s.* to 5*s.* a week, which enables them to pay a part or the whole of their rent. It is not to be wondered out that in these circumstances the children are frequently kept at home to work when they should be at school, for the earning of the rent means more food which many of them badly need. If the work is stopped additional difficulties will be severely felt by many poor families, but the investigations show that for public health reasons alone some supervision of the work must be undertaken. At present, in many instances, it is carried out under most insanitary conditions and may easily cause the spreading of disease. No machinery is yet available for the work and the manufacturers assert that foreign competition prevents them paying more than the sums mentioned. If this is really the case then any laws which force them to pay more must necessarily injure our manufacturers, for it has been proved over and over again that the people will buy the cheapest article, whether it is English or foreign, and they will ask no questions concerning the sanitary conditions under which the foreign article is made.

The Quarterly Report of the Medical Officer of Health.

The report of the medical officer of health for the fourth quarter of last year is very interesting reading in view of the prevalence of scarlet fever, diphtheria, and influenza during the later months of 1906, and it bears out the opinion so frequently expressed that the diphtheria epidemic has been of a peculiarly mild type. So far as scarlet fever is concerned, although it was undoubtedly very prevalent for a time, yet for the quarter the total number of cases was 150 less than the average and the mortality was only 2·6 per cent. as contrasted with 4·4 per cent. in the corresponding quarter of the previous year. In the case of diphtheria, 348 cases were reported but the death-rate was remarkably low, only 7·5 per cent., while the mean mortality rate of this disease during the three previous years was 15 per cent. The total death-rate from all causes was 15·8 per 1000, and this is the lowest record for any fourth quarter. The birth-rate during the corresponding period was 26·9 per 1000, or exactly the same as in the fourth quarter of 1905. But the feature of the report upon which we may congratulate ourselves most is the great diminution in the number of typhoid fever cases, of which only 71 were reported. This is extremely encouraging when it is remembered that as many as 417 cases have been reported during a previous fourth quarter. Unfortunately the type of the disease seems to have been more than usually severe, for the death-rate amounted to 28 per cent. On the whole the report is very satisfactory, for it shows that we are making steady progress, at all events in some directions, and there are even indications that before long considerable improvement may be shown in the death-rate caused by tuberculous diseases.

The Resignation of Dr. A. H. Carter.

Much regret has been caused by the sudden and unexpected resignation of Dr. A. H. Carter, the senior honorary physician of the Queen's Hospital. In accepting the resignation the committee of the hospital expressed its thanks to him for the splendid work which he had done in the hospital, both as a physician and as a clinical teacher, in the 30 years during which he had served on the staff, and it attributed the high standard of the work in the hospital greatly to his influence. As a token of its appreciation of his services the committee recommended him for election as honorary consulting physician. Dr. Carter still retains his professorship of medicine in the university, but his removal from the teaching staff of the Queen's Hospital will be greatly deplored by the students, for he possesses in an eminent degree the gifts of a clinical teacher, together with the capability of grasping and holding the interest and affection of his students. This resignation creates a vacancy which cannot easily be adequately filled.

Presentation to Mr. W. A. Addinsell.

For almost 25 years Mr. Addinsell acted as honorary secretary of the Birmingham Dental Hospital. When he undertook office the conditions were not favourable, the Dental Hospital was very inadequately and uncomfortably housed, and its income was only £200. During the period of his secretaryship the income has been increased to over £1000 and a thoroughly well-equipped building has been erected which is adapted both for the treatment of patients and the instruction of students. Wishing to commemorate his services, those who have been associated with Mr. Addinsell took the opportunity of his resignation to present him with several fine pieces of silver as a token of their appreciation of his valuable work for the hospital, and the presentation was made on Jan. 30th in the lecture hall of the building in the erection of which he has played so important a part.

The Bromsgrove Cottage Hospital.

The annual report of the Bromsgrove Cottage Hospital must be very satisfactory from the point of view both of the subscribers and the staff. The number of cases treated was 221 and the deaths were only eight. The income for the year was £798, and this sufficed not only to meet expenses and to pay off the deficit of £55 left over from last year, but also to leave in hand a balance of £40.

The Midland Counties Home for Incurables.

In future this excellent charity is to be known by the King's command as the Royal Midland Counties Home for Incurables, and Her Royal Highness Princess Christian and Her Highness Princess Louise Augusta of Schleswig-Holstein have consented to act as patrons. During the year the new

Radcliffe Memorial Wing has been opened and the financial condition of the home has assumed a very satisfactory position, the total income amounting to £6682, but nevertheless more funds are needed for increasing work.

Bequests to Local Charities.

Under the will of the late Mr. Richard Farmer Todd of Blythewood, Calthorpe-road, Edgbaston, who died in December last, the General Hospital and the Queen's Hospital will each receive £400; the Birmingham Institution for the Deaf and Dumb and the Moseley Convalescent Home £300 each; and the Children's Hospital, the Birmingham Orthopædic Hospital, the Birmingham Eye Hospital, and the Middlemore Emigration Homes £200 each.

Feb. 4th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

African Trade Section of the Liverpool Chamber of Commerce and Sanitation on the West Coast of Africa.

Dr. W. T. Prout, C.M.G., late principal medical officer at Sierra Leone, recently delivered an address entitled "A Few Comments on, and Practical Suggestions for, Health and Sanitation on the West Coast of Africa." Sir Alfred Jones, the chairman of the School of Tropical Medicine, presided. The lecturer dealt with the preservation of health as affecting Europeans on the West Coast, the question of segregation and general sanitation, anti-malarial measures, cesspits, and the substitution of some more modern and satisfactory methods. He paid a tribute to the valuable work done by the Liverpool School of Tropical Medicine in connexion with West Africa. That school had drawn attention to the necessity for organised effort in connexion with sanitary work and had applied a stimulus in regard to public health matters which had been of incalculable benefit and which the colonial and medical officers were of themselves powerless to effect. The educational aspect of the sanitary work was most important, as it would enable the natives to understand the value of the measures adopted. It was to the younger generation of natives that they must look for progress. With the educational influences at work in the direction indicated they would in time have a number of young natives to whom they could look, for instance, to improving the local conditions of the towns. He suggested that in this work of educating the natives West African merchants could help by offering prizes to the successful scholars. Another suggestion which he made was that the members of European firms with business houses in West Africa should take a more active part in local affairs. In regard to medical administration he made a dual suggestion—in the first place, that a director of the West African Medical Staff should be appointed who would reside for part of the year in England and for part in the colonies on the West Coast; and in the second place the formation of a West Africa Medical Council which would sit at stated periods in London. In conclusion, he expressed the opinion that life on the West Coast of Africa, from the point of view of health, was much less risky now than in the days gone by.

The Liverpool Royal Infirmary: Annual Meeting; The Hospitals and the Rates.

The annual meeting of the subscribers was held at the infirmary on Jan. 30th. The treasurer's report stated that for various reasons it had been found impossible to carry out the committee's sanguine hope that the proposed new out-patient department would have been commenced, for if maintenance under existing conditions was difficult it would hardly be wise to add what would clearly mean a large addition to annual expenditure. Meanwhile, plans had been prepared which would be available in the future whenever it was deemed prudent to undertake a work of manifest advantage. The portion of the Sir William Banks memorial fund allocated to the hospital for the purpose of a new out-patient department had been devoted to the acquisition of houses in Brownlow-street, which had secured the frontage and a necessarily extended site, the rents being reserved for the augmentation of the fund. The expenditure for hospital maintenance during the year was £15,786 and the debit balance was £2455. Mr. Harmood Banner, M.P., the President, in moving the acceptance of the report, alluded to the proposal for united action on the part of hospitals and infirmaries with the object of obtaining more money and for other purposes. Looking at the matter in a casual way it seemed to him that if there were such joint action it might take the heart out of the independence and public spirit which kept alive these separate institutions. Subscribers, in such an event, would be prone to say that as the hospitals were practically one institution one subscription would suffice. If united action were directed to the end of seeing that the hospitals were not abused, and that those who could afford it were called upon, so far as possible, to pay for the relief and ministrations which they received, it would be a commendable effort, but beyond that he should deprecate it. As chairman of the corporation finance committee perhaps he had no right to say that he deprecated also any application to the rates for hospital purposes. The corporation, as an employer of labour, should undoubtedly assist in getting its workmen to make a fair contribution to the hospitals as was done in many large collieries, ironworks, and factories. But if the money were taken out of the rates there would be a disposition on the part of the public to say that more and more the receipts should be drawn from the rates. As regards the question of placing hospitals entirely on the rates he thought they had a good object-lesson in the fact that the other day the city council reduced its own hospital estimates by £10,000. The less they placed them under the control of a body which at times had fits of economy the better it would be for the interests of these excellent charities.

Death of the Medical Officer of Health of Warrington.

Dr. J. G. Gornall, the medical officer of health of Warrington, died at his residence at Grappenhall on Feb. 4th. He had been in failing health for a considerable time and two months ago the town council granted him a long leave of absence in order to recuperate. Dr. Gornall only returned from Llandudno last week and for some few days had suffered from asthma. He was appointed medical officer of health of Warrington in 1901, a post which his father had also filled for a number of years. As medical superintendent of the small-pox hospital he successfully coped with an epidemic which occurred in the town between 1892 and 1894. He was the author of a valuable brochure on small-pox. The deceased leaves a widow and six children.

The Anti-malaria Campaign.

Last year the Liverpool School of Tropical Medicine sent Professor Ronald Ross, C.B., to Greece to study the question of the prevalence of malaria there. As a result of that visit the school has made a strong effort to raise funds in England for the purpose of combating malaria in Greece. A preliminary instalment of £200 has been sent to the Anti-malaria League through the British Ambassador at Athens, Sir Francis Elliot. A letter of thanks has just been received by Sir Alfred Jones, the chairman of the school, from the officials of the league, of which His Majesty the King of Greece is the patron.

Infirmary Extension at Warrington.

Owing to the growth of Warrington as an industrial centre an extension of the infirmary and dispensary has been found necessary, the present building being inadequate to meet the increased requirements of the district. An extension scheme, involving an expenditure of £15,000, has been inaugurated, whereby the present building will be enlarged by the erection of a pavilion on land adjoining the present institution. The pavilion will be three storeys high and will accommodate 66 additional beds. £11,000 have already been subscribed. The ceremony of laying the foundation stone took place on Feb. 2nd and was performed by Lord Lilford in the presence of a large gathering. The infirmary was founded 100 years ago and has become out of date.

Feb. 5th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Milk-supply of Cardiff.

IN the autumn of 1906 Dr. E. Walford, medical officer of health of Cardiff, was instructed by the health committee of the corporation to make a report upon the recommendations of the Interdepartmental Committee on Physical Deterioration. When commenting upon the recommendation of the

committee that further powers should be granted to sanitary authorities for controlling the milk-supply to the general community, Dr. Walford expressed the opinion that some provision was certainly required by which local authorities, especially those in large cities and towns, could obtain better control over the milk-supply to their districts so as to insure that such milk should be supplied under cleanly conditions and at a suitable temperature. He then gave some account of municipal milk depôts which have been established in other parts of the country, and it is evident that he does not altogether approve of this method of dealing with the difficulties of the milk-supply. He says that unless the sanitary authority controls the whole process of production from the cow to the consumer there can be no guarantee that the milk brought to the depôt has not been subject to injurious conditions during the transit, storage, or delivery. He believes that milk can be supplied in a comparatively clean and wholesome condition at least 24 hours after it is produced, provided that the sanitary condition of the dairy farm fulfils the strictest requirements; that the cows are milked in the open air and that the whole process is performed under the most cleanly conditions; that immediately after milking the milk is cooled down rapidly to 40° F., and that it is promptly placed in sterilised bottles and kept at a low temperature until distributed.

Foreign Lunatics in Cardiff.

Reference has been made in this column on former occasions to the large number of foreign lunatics who become chargeable to the city of Cardiff. They are usually seamen who are landed from foreign vessels and no means have hitherto been found for defraying the cost of their maintenance except out of the local rates. The corporation has now, however, decided to take advantage of the provisions of the Aliens Act and recently made application to the Home Secretary to make an order requiring the deportation of a German who on his arrival at Cardiff on a Danish ship was pronounced to be a lunatic. He had been kept in the Cardiff workhouse and the stipendiary magistrate certified that he was in receipt of Poor-law relief.

Housing Conference at Cardiff.

A conference of those interested in improving the houses of the working classes was held at Cardiff on Feb. 2nd. The difficulties attending the provision of proper housing accommodation in the colliery districts are admittedly great but they should not be insuperable. The configuration of the ground, the sides of valleys being often the only building ground available, increases the cost not only of the houses but also of the roads which must be made to them. The absence in new districts of a sufficient water-supply and of proper drainage has also to be reckoned with. Although in the past there has no doubt been lax administration of the Public Health Acts in connexion with the supervision of new houses there is at the present time much stricter compliance with the building by-laws than formerly. Especially is this the case in Merthyr Tydvil, in the Rhondda Valleys, and in Pontypridd. Sanitary authorities are getting to have a much fuller sense of their responsibilities than formerly and they will be stimulated into still greater activity by meeting together and discussing their difficulties with those who are well qualified to advise them.

Exchange of Nurses in Isolation Hospitals.

The administrative difficulties connected with the nursing staff in an isolation hospital of moderate size are well known. If a sufficient number of nurses is kept to cope with the maximum amount of work likely at any time to arise there will be a great many idle weeks in each year. On the other hand, if too few are employed there will be times when extra help will only be obtained with considerable trouble. In order to minimise these difficulties a scheme has been prepared for the loan of nurses between isolation hospitals in the cities of Bristol, Gloucester, and Worcester, and in the counties of Gloucester and Worcester. Registers of nurses available for transfer will be kept by the county councils of Gloucester and Worcester which, when required, will place in communication the superintendents of two hospitals, the one requiring a nurse and the other having one to spare. The fees fixed in addition to all travelling expenses are at the rate of one and a half guineas a week for nursing small-pox and one guinea for nursing other cases. For a probationer of at least one year's standing the fees will be one guinea and 15*s.* weekly. The nurse will receive in addition to her salary one-third of the fee to compensate her for moving. A nurse may be required to return to her own hospital at 24 hours' notice. It is not improbable that one result of this scheme will be the discovery that most of the isolation hospitals in the two counties are under-staffed. It is almost certain that the number of borrowing hospitals will far exceed those in a position to lend.

Appreciation of the Services of a Poor-law Medical Officer.

At a meeting of the Westbury (Wilts) board of guardians held on Jan. 29th a special vote of thanks was awarded to Mr. E. Peter Shorland who was resigning the posts of district medical officer and public vaccinator for the union after over 40 years' service.

Feb. 4th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Morison Lectures.

THE Morison lectures were delivered in the hall of the Royal College of Physicians, Edinburgh, on Jan. 28th and 30th and Feb. 1st. The lecturer was Dr. A. R. Urquhart, superintendent of the Murray's Royal Asylum, Perth. The subject dealt with was Mental Disorders with reference to Prognosis. The first lecture dealt with Prolegomena, the second with the Correlations of Mental and Bodily Disorders, and the third was a *résumé* of Prognosis.

Cerebro-spinal Fever.

During the week there has been some anxiety caused by reports that epidemic cerebro-spinal meningitis had appeared in Leith. So far as can be ascertained the alarm seems to have had small foundation. That cases have occurred in both Edinburgh and Leith is evidenced by the billet for the meeting of the Edinburgh Medico Chirurgical Society on Feb. 6th, when cases are to be referred to by Dr. John Thomson of Edinburgh and by Dr. W. Elder of Leith. The prevalence of the disease in Glasgow keeps the public health officials on the alert in Edinburgh. The Local Government Board has issued a memorandum for the guidance of medical officers of poorhouses where probationer nurses are trained. The age of the probationer is placed at between 20 and 35 years, she must have a certificate of good character and of good health, and have received a fair general education. It is of particular importance that the nursing in Poor-law infirmaries should be of excellent quality in view of the high fatality rate of cerebro-spinal fever and the associated meningeal disorders.

Dumfries and Galloway Royal Infirmary.

At the annual meeting of the governors of this institution held in Dumfries it was decided to close the sanatorium in connexion with the infirmary which had been opened in 1900 for cases of pulmonary tuberculosis. This decision was reached because of the expense and as the matter was being otherwise dealt with. It was further decided that the admission of cases of pulmonary tuberculosis which had not reached an advanced stage should be left to the discretion of the board of directors. This useful local hospital treated 738 in-patients and 1919 out-patients during the year; and the expenditure amounted to £4374.

Royal Hospital for Sick Children, Glasgow.

The annual report of the Royal Hospital for Sick Children shows that the total number of cases treated indoors during the year was 1150. Of these, 544 were medical and 606 were surgical, showing an increase in the medical cases of 11 and a decrease in the surgical cases of 62. During the year there were 165 deaths. The percentage of deaths to the total discharged was 14·93, but excluding 69 children who were so ill when admitted as to die within 48 hours thereafter the percentage is reduced to 8·7, as compared with 8·4 of the previous year. The total attendances at the dispensary were 42,486. The total income for the year was £6468 and the expenditure was £7476.

Cerebro-spinal Fever in Glasgow.

During the month of January no fewer than 52 deaths from cerebro-spinal fever have taken place in Glasgow and during the same period 103 cases of the same disease have been notified to the medical officer of health. When these figures are compared with the 205 cases notified during the period

from May 21st, when the disease was first included in the list of notifiable diseases, until the end of December one cannot but think that it is much more prevalent in the city than most people suspect. About half the cases notified in January were dealt with in the Belvidere and Ruchill Hospitals, a few being found in the general infirmaries. 33 of the hospital cases were verified by bacteriological examination, as were also 17 of the fatal cases outside. It is evident that the disease prevails elsewhere in the west of Scotland than in Glasgow, as among last year's fatalities were cases from Clydebank, Whitewich, Partick, Coatbridge, Port Glasgow, Rutherglen, and Scotstown. In Glasgow the cases are principally occurring in the north and north eastern districts, but a few isolated cases have also been reported from the south side.

Anderston Health Association.

A special meeting of the Glasgow and West of Scotland branch of the British Medical Association was held last week to receive the report of the deputation appointed to meet with the Anderston and District Health Association and to express the views of the "branch" with regard to the proposed new dispensary. The deputation reported that it found the directors of the Anderston and District Health Association to be a band of earnest and devoted philanthropists who were attacking the old problem of what might be called the human residuum. On investigating the subject, however, it was agreed by the medical profession that there was ample medical charity existing in the district. The directors of the association, in spite of this opposition, were determined to found a dispensary and further to exploit the medical profession instead of directing their efforts towards the abolition of overcrowding and the demolition of insanitary areas. Further, it had been suggested to the deputation that the Glasgow and West of Scotland branch of the British Medical Association should send two representatives to join the board of directors of the Anderston and District Health Association. After some discussion it was agreed by 37 votes to 17 that the "branch" should not send representatives to join the board.

Poor-law Nurses in Scotland.

The Local Government Board for Scotland has just issued a memorandum prescribing the training that nurses will in future receive in Poor-law hospitals and giving details of a scheme under which the Board is periodically to hold examinations and to grant diplomas to those nurses who successfully pass the examinations. The result of this will be that Poor-law nurses, who at present are at a disadvantage compared with nurses trained in the best general hospitals, will in future receive a training quite equal to that given in any other institution; and, having been certified by a public department that has a certain reputation for strictness, will possess a valuable testimonial. The scheme will largely affect Glasgow, as within its area there are four of the best Poor-law hospitals in the kingdom, where a large number of probationer nurses are always in course of training. So far there is no corresponding certificate granted to nurses by any other Government department and the only regret is that the system has not been extended to all nurses instead of being limited to a particular class. Such a general scheme of training, examination, and certification by the Local Government Board would be a valuable supplement to a system of State registration.

Gift of a Sanatorium for Argyllshire.

At a meeting of the Lorn district committee held at Oban last week Dr. Roger McNeill, the medical officer of health of the county, offered, on behalf of a lady and gentleman who prefer that their names should not be disclosed, to build a sanatorium to contain 25 beds for the treatment and isolation of persons suffering from tuberculous disease on condition that the committee undertakes to keep and to maintain the buildings and sanatorium.

Arbroath Infirmary and the Elliot Railway Disaster.

At a meeting of the directors of the Arbroath Infirmary a motion was carried which after expressing sympathy with the sufferers from the accident, went on to say that the directors "also desire to put on record their high appreciation of the disinterested and noble services of the infirmary staff rendered to the wounded in the most trying circumstances. The treatment of the wounded was prompt, skilful, beneficent, and altogether satisfactory, reflecting the greatest credit on the physicians, lady superintendent, nurses, and servants, and commending them to the confidence of the public." In support of this resolution many things were said highly complimentary to the infirmary staff who seem to have met the large demand suddenly made upon them in the most admirable way.

Feb. 5th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

University Education in Ireland.

THE morning papers have been filled with letters and suggestions in reference to the Government proposal for the enlargement of the University of Dublin and the inclusion of other colleges, in addition to Trinity College, within it. The most important of these appeared on Feb. 2nd, entitled, "Protest by the Bishops of the Church of Ireland," signed by the 11 Bishops of the Church as graduates of the University of Dublin—the Primate (Most Rev. Dr. Alexander) is a graduate of Oxford and the See of Limerick is at present vacant through death. The Bishops record their emphatic protest against the scheme of university education in Ireland as set forth in the recent speech of Mr. Bryce. They state, moreover, their belief that an entire reconstruction of the Royal University would be found the true solution of the difficult problem. The Roman Catholic Bishops have up to the present made no pronouncement.—There was a meeting of the Senate of the University of Dublin on Feb. 4th in the Examination Hall, Trinity College. The attendance of senators was not large but a considerable number of undergraduates and members of the University was present. A motion was carried, proposed by the Provost and seconded by the Right Hon. J. H. M. Campbell, M.P., to the effect that the meeting was of opinion that the scheme which Mr. Bryce outlined in his speech of Jan. 25th would be fatal to the best interests of liberal university education in Ireland as well as unjust to Trinity College.

Cerebro-spinal Fever.

At a meeting of the Dublin corporation held on Feb. 4th a motion suggested by Sir Charles Cameron was carried making cerebro-spinal fever notifiable for a period of six months.—Notwithstanding everything that is being done the outbreak of cerebro-spinal fever continues to increase in Belfast, where, since December, up to Feb. 5th there have been 53 cases with 25 deaths. At a special meeting of the corporation on Feb. 4th it was decided to make the disease under the Infectious Disease (Notification) Act, 1889, a notifiable one as has been done in Dublin, and it is hoped that the various urban sanitary authorities will take a similar course. It is probable that the disease which specially affects children came to Belfast from Glasgow, where an epidemic has been for some time in existence, but how it was introduced is still a mystery. The type met with so far is very virulent, the necropsies showing, even in the most rapid cases, purulent inflammation of the membranes of the brain and cord. The specific organism has been found both before and after death, and the clinical picture is a clearly defined and readily recognisable one, but the puzzle is, How does the disease spread? It appears erratically in different parts of the city, not like either an air-borne or a contact disease, and curiously, so far, at none of the hospitals where the patients were sent has any nurse student, or medical officer brought in contact with the disease taken it (the medical student who died from cerebro-spinal fever had never seen a case). In the meantime notification, isolation, and disinfection—very much as counsels of perfection—are being employed, but with no appreciable effect. Can the disease be taken with food?

Hygiene in the Primary Schools.

At the annual meeting of the Newtownards Nursing Society on Jan. 28th, the Marchioness of Londonderry presiding, Sir John Byers, who had been specially invited to be present, dealt with the problem of the hygiene of the primary schools which he discussed under three heads: (1) medical inspection of the school children both on entrance to, and during attendance at, the primary schools; (2) the teaching of hygiene to the children; and (3) the construction and equipment of the schools. He pointed out, by reading extracts from the seventy-second report of the Commissioners of National Education, the lamentable condition of the Irish

primary schools. A hearty vote of thanks was accorded to Sir John Byers for his address.

Health of Belfast.

At the usual monthly meeting of the corporation of Belfast, held on Feb. 1st, it was reported that for the five weeks ended Jan. 19th the death-rate of Belfast was 21·5. 218 cases of zymotic disease were reported during this period. The general death-rate is higher than for the corresponding period of 1906, when it was 19·1. The following resolution passed by the public health committee was confirmed by the council:—

That the council be recommended to authorise this committee to enter into negotiations with the proprietors of an existing hospital for the erection by the corporation in connexion with such hospital of accommodation for 25 patients and for the maintenance and treatment of such patients on the lines suggested by the medical superintendent officer of health; also, to approve of a scheme for the establishment of a dispensary for the treatment of consumptive patients on the same lines as in Edinburgh, and as suggested by the medical superintendent officer of health, and that the necessary provision for these matters be made in the estimates of the expenditure for the ensuing year, the public health committee to be empowered to carry out the details.

The Belfast Hospital for Sick Children.

The annual meeting of the friends and supporters of this hospital was held on Jan. 31st, and the report of the medical staff showed that during the past year the number of patients treated had been 837 (407 medical, 420 surgical, and ten eye cases). There were 40 deaths (25 in the medical and 15 in the surgical wards). 330 operations had been done. In the extern department there were 2984 new medical, 1870 new surgical, and 242 eye cases, while there were 455 dental cases. 441 operations were done in the extern department. Financially, there was a deficit of £545 3*s.* 5*d.*

Feb. 6th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Horseflesh.

THE horse is becoming more and more a butcher's animal. In 1906 out of 28,937 horses sold in the horse market on the Boulevard de l'Hôpital 22,792 went to the abattoir at Vaugirard—that is to say, about 80 per cent. of the total number sold. Including those horses which were slaughtered at the abattoir without first having passed through the market it is calculated that in all 45,000 horses were sold for food. The average weight of foodstuff provided by one horse is 250 kilogrammes, so that 45,000 horses means that some 11,000,000 kilogrammes of horseflesh were used either in the fresh state or in the form of sausages. In 1899 the total quantity was less than 5,000,000 kilogrammes. The increase in the price of beef no doubt accounts for most of this increase, but medical prescriptions have something to do with it, for raw horseflesh has recently been recommended for those suffering from tuberculosis.

Spinal Anæsthesia in the Surgery of Children.

At the meeting of the Surgical Society held on Jan. 16th M. Kirmisson read for M. Gaudier an account of some observations on the above-mentioned method of anæsthetisation. All the operations in which it was used were either concerned with the lower extremities or the inguinal region. The dose of stovaine used was very small in all cases. Some of the patients suffered from vomiting, either early or late, and a few complained of slight headache, but not one suffered from any shock and all were able to eat immediately after the operation was over. In some very nervous patients it was found necessary to give a few whiffs of chloroform as well as the stovaine.

The Quantity of Ether found in the Tissues at the Moment of Death from this Anæsthetic.

M. Nicloux gave an account of some researches which he has recently made on this subject to the members of the Biological Society on Jan. 26th. At the moment of death from the inhalation of ether all the tissues contain recognisable quantities of the drug. The brain and the medulla contain the greater quantity, as much, in fact, as is the case with chloroform when this anæsthetic has been used. The fatty tissues also contain a large quantity, about 400 milligrammes per 100 grammes. This is only to be expected when the power which ether possesses of dissolving fatty matter, and *vice versâ*, is taken into consideration.

The Evils of Cocoa in the Feeding of Young Children.

M. Varot read a paper on this subject before the Hospitals Medical Society at a meeting held on Jan. 19th. A certain number of children had come under his notice who had been fed regularly upon cocoa since they had been weaned. The children liked this diet and in many cases refused any other form of nourishment. However, they soon began to suffer from constipation and anæmia, they were puffy, pale, did not gain in weight, and became nervous and irritable. According to some investigations carried out by M. A. Goutier cocoa is the food substance which is the richest in oxalic acid and the troubles from which these children suffered seemed likely to be due to chronic poisoning by this compound.

A Fatal Case of Anthrax (Charbon).

At the same meeting of the same society M. Ménétrier and M. Clunet gave an account of this case. The malignant pustule had followed the bite of an insect and the ordinary therapeutic measures—namely, the injection of iodine around the pustule—had not delayed the fatal issue. The two observers had been able to detect virulent anthrax bacilli (*bactérie charbonneuse*) in the fluid from the pustule and in the œdematous issues of the mediastinum. Histological examination of the pustule showed hæmorrhages both under the epidermis and under the true skin and this was taken to be the initial lesion on account of the marked dilatation of the arterioles. Inoculation into a guinea-pig produced the usual ecchymotic patch which gradually became black and dry with a zone of surrounding œdema. The animal died at the end of six days from septicæmic anthrax (*septicémie charbonneuse*).

The Pasteur Institute.

M. Osiris, the well-known financier whose death was recently announced and who during his lifetime devoted large sums for the purposes of charity, art, and science, has, by his will, bequeathed half his fortune, amounting to about £1,000,000, to the Pasteur Institute.

Feb. 5th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Clinical Thermometry based on the Temperature of the Urine

A NEW method of taking the temperature of the living body has been worked out by Dr. Martin Engländer, and in addition to being accurate it is so simple and rapid that a great many temperatures either of patients or of individuals in good health may now be taken with very little trouble. Dr. Engländer has acted on the idea that the temperature of the urine as it leaves the body must show the temperature of the interior of the body with more accuracy than measuring the temperature of the axilla, rectum, or mouth. The urine is collected in a receptacle made of filter paper which must be very stout so as not to tear when used for some time. A double thickness of this paper is folded into the shape of an ordinary conical filter and an ordinary thermometer, preferably a short one, is then pushed through the inner layer of the filter in such a way that the bulb containing the mercury is nearly at the bottom of the cone whilst the upper end of the thermometer just reaches the upper border of the cone. An opening of about a quarter of an inch in diameter is then cut out at the bottom of the cone and the instrument is ready for use. The patient micturates, after having first placed the orifice of his urethra in the filter, which is held together with the thermometer by the medical man. The paper receptacle is instantly filled with urine at the temperature of the body and as the paper imbibes the liquid the thermometer is at once and constantly covered by the urine. In from seven to eight seconds the temperature can be read from the instrument and it has been found that with an opening of the before-mentioned size a quantity of more than 100 cubic centimetres will have flowed through the filter in that time. The advantages of such a method are its trustworthiness and rapidity. On account of its physical properties as a good conductor of heat, mercury when placed in contact with a liquid at 98° F. acquires the temperature of the liquid in four or five seconds. In the process now described the whole of the mercury contained in the thermometer is constantly surrounded in the filter by urine which is freshly voided and therefore at the temperature of the

body. Dr. Engländer has tested his method on more than 250 patients and always controlled his results by taking the temperature also in the axilla in the usual way. He found that the differences of the body temperature as observed in the morning, at noon, and in the evening were also shown in the urine temperatures. But a very important difference is the exactness of the measurement of the urine temperature. It was found that whilst the usual difference between the temperature in the axilla and that of the urine was only 0·1° to 0·3° C., a warm bath or muscular exertion, which did not increase the reading for the axillary temperature, showed an increase of 0·5° to 1·5° C., thus proving the axillary method to be incorrect and confirming the superiority of the urine estimation. The only disadvantage of the new process is the necessity of obtaining at least 50 or 100 cubic centimetres of urine. The method is very useful for out-patient departments and for experiments in air-balloons, caissons, and mountaineering.

Hospital Abuse.

In spite of the recent regulations the abuse of charitable institutions, and especially of the out-patient departments of the public hospitals, has increased so much lately that further measures will have to be adopted. A conference of the directors of the Vienna Hospital and the members of the Sanitäts-commission of the Government recently took place when it was admitted that the question was one of the utmost importance for the medical profession. These grievances are of very long standing and the attempts to improve the conditions are as old as the hospitals themselves. The difficulty, or rather impossibility, of verifying the data given by the patients as to their financial position plays the most important part in these abuses and the remedy recommended by the police recently that each patient should produce a certificate of poverty supplied to indigent persons is too clumsy and slow-working an experiment. The clinics of the hospitals cannot have any restriction as to the admission of in- and out-patients because they must choose their material for purposes of study and clinical instruction. The public soon became aware of that fact and since the new regulations have been in force a marked increase of the numbers of patients in the clinics was coincident with a diminished frequency in the other hospitals. Still, the funds of all these institutions are taxed very severely, so that the necessity of finding an adequate way of stopping hospital abuse without doing injustice to the really poor is urgent.

Successful Transplantation of the Cornea.

In a communication read at a recent meeting of the Vienna Medical Society Dr. Zirm of Olmütz, in Moravia, explained his method of transplantation of the cornea. The results of this operation have now been successful for the first time in medical history and have remained so for, at present, 15 months. The patient, who was shown to the meeting, is now 40 years of age. In the summer of 1905 both his eyes were severely injured by lime-water. Both corneæ became of a whitish-grey colour and almost opaque, so that vision was reduced to the perception of light only. Three months after the accident Dr. Zirm transplanted into both eyes portions of the cornea taken from the freshly enucleated eye of a boy, aged 11 years, whose eyeball had been penetrated by a fragment of iron. The transplanted parts remained adherent for ten days, when the right eye began to show symptoms of irritation; the tension increased and the transplanted corneal flap became opaque and painful, so that an opening in the sclerotic had to be made. Subsequently the transplanted cornea had to be removed entirely. The left eye, however, continued in a very satisfactory state and its present condition is such that the patient can discern fingers at a distance of 12 feet and can read No. 12 of Jäger's scale with bi-convex glasses of eight diopters. The optic disc is easily visible and the man is once more able to work. As regards the technique of this exceedingly interesting operation it is absolutely necessary to use a fresh human cornea of unimpaired vitality, preferably from a young person; the opening in the eye must be exactly equal to the size of the transplanted corneal part. This is obtained by the use of the trephine devised by von Hippel. Absolute asepsis, without antiseptics, and the absence of any instruments in transporting the cornea are necessary. The excised cornea is kept between two moist strips of gauze, which are kept warm by means of steam. The new cornea is retained in its place by means of two sutures passed through the ocular conjunctiva. It is interesting to note that at present the transplanted cornea has now assumed such normal conditions that it is entirely devoid of vessels.

Feb. 2nd.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

The Use of Cryoscopy in the Diagnosis of Renal Conditions.

ALTHOUGH opinions are still very much divided concerning the value of cryoscopy in renal diagnosis almost every clinic in Budapest makes use of this method. This is not surprising, because the phenomena connected with the depression of the freezing point were first made known in Budapest in the clinic of Professor Korànyi, who is still busy with the study of cryoscopy. An expert clinician has, however, lately expressed some doubt as to the trustworthiness of this method. He said that the character of the food and the amount of fluid ingested seem to have a marked influence upon the freezing point of the urine, but even if the diet is simple and absolutely uniform the figures vary within very wide limits. Several cases have been reported in which the wrong kidney would have been extirpated if nothing but the "molecular concentration" of the urine had been taken into consideration. Much more satisfactory results are obtained if attention is also paid to the daily amount of urine and if renal activity is expressed in so many daily molecules. In all cases the diet should be controlled and the catheters should be introduced at a definite period after a meal and left in position for at least two or three hours, since fluctuations are very common. At best the method is only approximate, but though troublesome it offers valuable aid in conjunction with other data.

General Anæsthetics in the Budapest Surgical Clinics.

There is now a tendency in Budapest to substitute ether for chloroform, since it has been shown that the ideal ether anæsthesia is not accompanied by suffocation and does not necessitate the use of a large amount of the drug. The method at present recommended is the following. The patient first receives a dose of morphine half an hour before the operation. In cases of laparotomy it is best to substitute codeine in a dose of five centigrammes, since this is less liable to interfere with peristalsis after operation. The patient is then etherised, drop by drop, with an ordinary chloroform mask. The muscles generally become relaxed in from 10 to 20 minutes after the use of from one to two ounces of ether. Sometimes it is desirable to hasten the first stage by giving a few drops of chloroform after the ether has sufficiently stimulated the heart. The best position for the head is that of hyper-extension by means of a pillow under the shoulders. The after-effects are exceptionally mild and collapse during operation is almost impossible. During the last three years in the surgical section of the county hospital Dr. Adolf Erdöl of Nagyvàrad has anæsthetised patients 300 times without a single mishap. The drop method of administering ether is by far the best. In some gynæcological clinics in Budapest morphine-scopolamine narcosis is in favour. It is said to be free from danger if used properly and if followed by ether narcosis. Half a milligramme of scopolamine and one centigramme of morphine are injected from half to one hour before the operation, when the patients will invariably become unconscious with a minimum amount of ether and will exhibit none of the usual disagreeable symptoms. Dr. Tauffer has employed scopolamine narcosis for the last three years to his complete satisfaction. Some gynæcologists employ twice the amount of scopolamine and 15 milligrammes of morphine distributed over three doses given two and a half hours, one and a half hours, and half an hour before the operation and generally dispense with other anæsthetics. The pulse and respiration are but slightly affected, salivation is moderate, and the intestines and urine are not affected, since the bad effects of each drug are counteracted by the other. Supervision is hardly necessary though sometimes the tongue must be pulled forward. The stomach need not be entirely empty before operation and small amounts of water may be given soon after as they do not provoke vomiting.

Soldiers and the Spread of Hygienic Knowledge.

Dr. Eduard Weiss has recently published a work entitled "Militär- und Volkshygiene," in which he states that

soldiers during their compulsory service ought to be taught the elements of hygiene and first aid in order that after leaving the army they may be able to tell the country-folk what to do in cases of epidemics or accidents.

Factory Hygiene in Hungary.

Factory hygiene has up to the present time been somewhat neglected in Hungary, but the necessity of caring for the health of factory workers is at last being recognised. The Workmen's Defensive Union recently sent to the Government a petition embodying proposals as follows: (1) notification of industrial poisoning to be made compulsory; (2) the medical officers of factories to be made independent of the proprietors; (3) the production of industrial poisons to be notified; (4) a special chair to be created in the University for the teaching of factory hygiene; (5) accurate statistics of cases of poisoning to be compiled from month to month; and (6) the hours of work to be determined by the medical officer of the factory in accordance with the nature of the poisons used in the work. Industrial poisons are specified as sulphuric acid, sulphurous acid, hydrochloric acid, nitric acid, oxalic acid, iodine, bromine, coal gas, cyanic acid, arsenic, phosphorus, corrosive sublimate, chromium, lead, aniline dyes, nitrobenzol, brass, atropine, picric acid, carbolic acid, strychnine, and curare.

Jan. 26th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Forest Preserves as a Resort for Tuberculous Patients.

THE State of Pennsylvania is notable for its immense "forest preserves," for its "School of Forestry," and for its liberal forest laws. Its Commissioner of Forestry, Dr. Rothrock, is a physician of large experience in public affairs as well as an expert in knowledge of his profession. Some time since he announced that citizens of that State are entitled to the privilege of using the forestry reservation of the State under proper restrictions as a residence while regaining health, and recommended it especially to those in need of the fresh-air treatment for tuberculosis. This privilege has been utilised, with the aid of the State, in the establishment of a "Camp Sanatorium." The result has been entirely satisfactory, as 75 per cent. of those treated have either recovered or been greatly improved. The State built the "cabins" in which the patients live and the charge is one dollar a week for all supplies and services except washing and the care of their apartments. Dr. Rothrock believes that the forest reservations furnish an answer to the further problem of how to care for the consumptive.

Longevity of College Athletes.

The head-master of the Yale University gymnasium, Dr. Anderson, has made an interesting contribution to the much debated question as to the expectation of good health and longevity of those who excel in athletics during their college course. The athletic records of Yale show that between the years 1855 and 1905 the number of men who gained a position on the crew, baseball, football, or track teams was 807. Of this number 58 have died. Of these 58, 18 were crew men (naturally as this is the oldest sport), 16 were football men, 13 were track men, and 11 were baseball men. An estimate shows that the greatest mortality has occurred among the football men. Crew men were second, track men third, and baseball men fourth, with an extremely low average. Compared with the select mortality tables of the Actuarial Society, made up from mortality averages all over the country, the athletes show a remarkable longevity. Deaths from heart disease, of the 58, were four, at the ages of 35, 57, 68, and 70. The average is low. Pneumonia killed six, typhoid fever five, and typhoid pneumonia two; nine met with violent deaths, of which two were suicides; one died from dissipation which was not traceable to athletics. As 24 of the 58 deaths were caused by various forms of lung trouble and heart failure there is some ground for the belief that high athletics affect these organs unfavourably.

Report of the Surgeon-General of the Navy.

The ratio of deaths in the navy and marine corps during the past year was 6·48, which is slightly greater than in the year preceding. Though the ratio of admissions to the sick list per 1000 was less the mortality was greater, due in part to the disaster to the U.S.S. *Bennington*, in which 66 persons perished. The principal causes were: tonsillitis, 2397; gonorrhœa, 2085; wounds, 1308; bronchial affections, 1032; malaria, 1024; and syphilis, 981. Admissions for tuberculosis, typhoid fever, and pneumonia were 243, 172, and 145 respectively. The term of instruction in the Hospital Corps Training School has been extended four months. The Surgeon-General calls attention to the special aptitude of women for the care of the sick and states that the bureau is desirous of obtaining for duty at naval hospitals and on training ships a corps of trained women nurses. To this end he recommends that legislation authorising the employment of women nurses should be requested by Congress.

Instruction in Medical Economics in Medical Schools.

At the meeting of the American Medical Association held in Boston in June last it was suggested in the House of Delegates that each medical college should be requested to consider the establishment of a department in medical economics. The subjects suggested for such a course were: (1) a business course; (2) a course in medical ethics; and (3) a course on organisation. It is stated that the necessity of such a course was suggested by those who have been most active in endeavouring to perfect the reorganisation of the medical profession under the American Medical Association. Physicians as a class were found to be very deficient in a knowledge of business methods such as the organisation of societies, the duties of expert witnesses, the relations of medical men to each other and to the community, the duties of health officers, and similar subjects. It was alleged that if the students were educated in these branches the profession would be more up to date in all matters pertaining to public affairs and the private interests of both the physician and his patient. No response has yet been made by the medical schools which have been addressed on the question of the propriety of organising such a course of instruction.

Bill to Regulate the Practice of Osteopathy.

A Bill before Congress to license the practice of osteopathy in the District of Columbia provides that there shall be a board of five physicians, in good standing, adherents of the osteopathic system of practice; that applicants shall furnish proof of good moral character and of being over 21 years of age, and shall present a diploma issued to him or her by a reputable college of osteopathy, which required personal attendance on a course of instruction of not less than 27 months; that all examinations shall be both theoretical and practical and of sufficient severity to test the candidate's fitness to practise osteopathy; that all questions propounded for the examination of applicants, except such as relate specifically to the treatment of disease, shall be the same as the questions to applicants for licence to practise medicine under the provisions of the present law, which includes all of the branches taught in the medical colleges; and that the answers submitted by applicants shall be marked on a scale equivalent to that adopted for the marking of the answers submitted by applicants for licence to practise. This Bill shows a marked change in the promoters of osteopathy. Heretofore they have claimed that they were not physicians within the meaning of the law and that they did not treat diseases by such methods as to bring them within the scope of the law. Now they ask to have all applicants for licence to practise placed on the same footing as to qualifications as other practitioners. The only special feature distinguishing this medical sect, according to this Bill, is the method of practice.

Conference of the Committee on Medical Legislation.

The annual meeting of this committee was held in Washington from Dec. 13th to 15th, 1906, at which Bills relating to medical affairs pending in Congress were discussed and appropriate action was taken. The committee represents the American Medical Association and through that body the profession of the United States. The Bills of most importance in Congress relate to the creation of a national health department, the Army Reorganisation Bill, the Canteen Bill, and the Osteopathic Bill.

Jan. 28th.

CEREBRO-SPINAL FEVER IN GLASGOW.

A MEMORANDUM upon the occurrence of cerebro-spinal fever in Glasgow will be presented by Dr. A. K. Chalmers, medical officer of health of the city, at the next meeting of the health committee of the town council, but as there does not happen to be a meeting of that council next week, the chairman—wisely in view of the public interest of the matter—has decided to allow the publication of the memorandum at once.

Dr. Chalmers's admirable memorandum commences by an analysis of the recorded deaths in Glasgow during recent years which had been attributed to the groups of nervous diseases among which cerebro-spinal fever would be readily included. He shows that during 1906 deaths referable to cerebro-spinal meningitis (using the term as synonymous with cerebro-spinal fever, tuberculous meningitis, and simple meningitis exceeded by 136 the average of the preceding years, the number of deaths under the first two designations having gone up by 147 and 63 respectively, while there has been a reduction of 74 under the last. He shows that further inquiry can be restricted to considering deaths in subjects under 20 years of age, as above that age the figures for the last six years remain practically constant. In 1906 the average of deaths from these conditions in subjects under 20 years of age was distinctly high in the first six months of the year, and abnormally low in the last six months. If, however, tuberculous meningitis in cases under five years of age is alone considered the opposite result is obtained, the increase in fatality being from July to December, and the same holds good in respect of simple meningitis between the ages of five and 20. From these figures Dr. Chalmers gives a conception of the movement of meningeal disease in the period under review, and after analysing the cases registered since the spring of 1906 under two headings—viz., those treated in hospital and those treated in their own homes—he infers that a peculiarly fatal form of meningitis is present in Glasgow and is recognised as well outside as within the hospital walls. The figures for January, 1907, confirm this view, about 56 per cent. of the cases occurring in children under five years of age.

Regarding the methods by which the infection is conveyed nothing of a definite character is elicited, but the memorandum ends with the following suggestive paragraph:—

> Multiple cases in households have been observed, but they have mostly been so closely related in date of onset as to suggest simultaneous infection. One of the most suggestive circumstances observed has been the occurrence of a considerable number of cases among breast-fed infants who had no known association with any family suffering from the disease. It was one of the older theories held concerning cerebro-spinal fever that infection reached the central nervous system along the nerve tracts, and the increasing prevalence of the disease during January may have some relation, through depressed vitality and the natural resistance to disease, to the somewhat exceptional low temperatures which characterised the weeks ending Dec. 29th and Jan. 26th. Whether any definite relation to this can be finally established remains to be seen, but the association suggests that the utmost care should be taken to guard young children against the variations of temperature, and especially the low temperatures through which we are presently passing. This, together with a rigid observance of absolute cleanliness of everything which may be placed in the mouths of young children, whether for food or other reasons, are suggested by the facts which have come under notice. In households where cases occur it should be remembered that discharges from the mouth, nose, and ears have been associated with the occurrence of the disease in former outbreaks elsewhere.

THE London Temperance Hospital and the Chelsea Hospital for Women have each received a present of 20 pheasants for the patients from His Majesty the King.

SOCIETY OF ARTS.—At the next ordinary (Wednesday) meeting of the Society of Arts to be held at 8 P.M. on Feb. 13th Lord Montagu of Beaulieu will read a paper on Motor Omnibuses. On Feb. 14th in the Indian Section at 4.30 P.M. Sir Frederick S. P. Lely, late chief commissioner of the Central Provinces, will read a paper on the Practical Side of Famine in India. On Feb. 20th at 8 P.M. the subject of Cold Storage and Food-supply will be discussed by Mr. Hal Williams. A course of three Cantor lectures on Romanesque Ornament will be delivered by Mr. F. Hamilton Jackson at 8 P.M. on Feb. 25th and March 4th and 11th.

Obituary.

SIR MICHAEL FOSTER, K.C.B., M.D. LOND., D.C.L., LL.D., D.SC., F.R.S.

THE whole scientific world learned with deep regret at the end of last week that Sir Michael Foster, until recently the secretary of the Royal Society, had died unexpectedly in London. His death occurred actually on Tuesday, Jan. 29th. Three days before his death he had been working at Stanstead in the laboratories attached to the experimental farms of the Royal Commission on Tuberculosis, of which he was appointed chairman some six years ago, while on the day before his death he attended and spoke at the annual meeting at the Mansion House of the British Science Guild. Sir Michael Foster's health had for some months not been satisfactory, we are informed, but the sad event was unexpected by many of his intimate friends.

Michael Foster was born at Huntingdon on March 8th, 1836, being the son of the late Michael Foster, F.R.C.S., the principal surgeon in that town. He was educated at the local grammar school, at University College school, and later at the University of London, where he took the degree of Bachelor of Medicine in 1858 as well as classical honours. As a boy he was a proficient classic, but he came of Nonconformist stock, and although the neighbouring University of Cambridge was offering rich scholarships to lads of his attainments his inability to subscribe to the Thirty-nine Articles prevented his entering into competition for them. On graduating in medicine he for a few years went into general practice with his father at Huntingdon, but his true vocation was not general practice and he soon returned to London as a teacher. His valuable services at University College, London, where he had been a highly successful student, were quickly recognised, and in 1869 he was appointed professor of practical physiology in the College. In the same year he obtained the first public recognition of his great and original talents by being selected Fullerian professor of physiology at the Royal Institution in succession to Professor Huxley. Yet all this was but preliminary to his real life work which began when in 1870 he threw in his lot with the medical school at Cambridge, then, under the influence of George Paget and George Humphry, beginning to be recognised as a highly progressive school. The time of Foster's arrival at Cambridge coincided with a remarkable development of scientific feeling in the University, and when the history of the rise of the school of British physiology is written the tale will be largely of what two workers, Michael Foster and John Burdon Sanderson, have done. Especially will this be found to be the case when physiology is considered in relation to medicine. The debt that Cambridge owes to Michael Foster may be indicated by saying that his name will live not so much in the printed accounts of his own investigations as in the work of those whom he trained and inspired. The magnificent school that he watched and cared for from infancy to adult life is his Cambridge record, and all Foster's work in the organisation and administration of great movements initiated for the advancement of knowledge, for the study of disease, and for the internationalisation of all that is good and worthy in science had its origin in his Cambridge labours.

Although Foster went into practice almost as soon as he had graduated, it is evident that the interest in physiology aroused by such teachers as Sharpey and Graham at University College, London, was not allowed to grow less keen, for he must have continued his experimental investigations even whilst acting as assistant to his father. The outcome of some of this work was a paper on the Effects produced by Freezing on the Physiological Properties of Muscles, which appeared in the Proceedings of the Royal Society, Vol. X., 1859–60, and from this time on to 1877 13 more important papers, or sets of papers, came from his pen, among which may be mentioned three papers which he published in connexion with his pupil and friend, the late A. G. Dew-Smith. Physiological chemistry, histology, laboratory technique, and electrical stimulation of heart muscle were all tackled in turn in these communications and each subject was made more clear by his firm and lucid treatment. When he migrated to London after relinquishing medical practice he was at once seen to have found his *métier*. His teaching of practical physiology in University

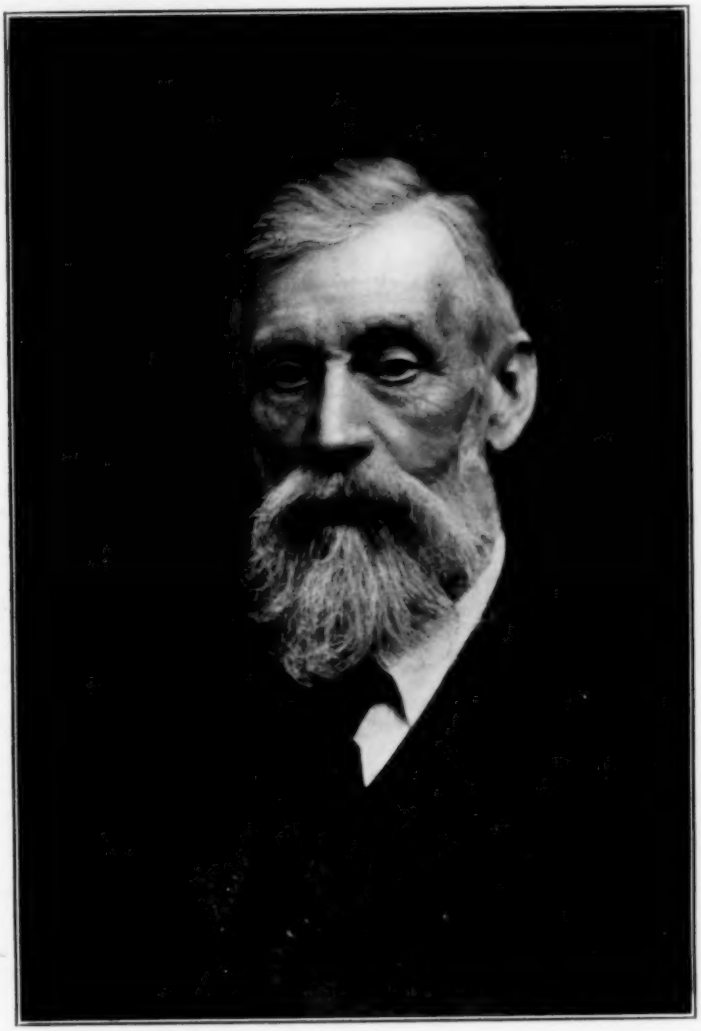
College, London, was worthy of the traditions laid down by "the incomparable" Sharpey, but within two years he had to vacate this appointment and to go abroad on account of greatly impaired health. On his return Cambridge received him and he was appointed to the position of prælector in physiology, not in the University, but in Trinity College. His lectures were, however, open to the whole University and all the medical students attended them regularly. Ten years later a wider sphere of usefulness and power was opened up to him, for he was elected to a University chair of physiology, specially founded for his occupancy. The class-room and laboratory accommodation provided for his use was, however, of the most restricted and elementary character. At first his classes met in a room now occupied by the philosophical library. Here, with pipe between his teeth or in his left hand, he would instruct and direct his students, of whom at that time, as always, he had a most devoted and enthusiastic band, and his readiness to discuss all difficulties with them and to outline future researches as matters in which all would collaborate are still gratefully remembered by his students. The men whom he then trained in due course became famous as investigators and teachers, and one and all they have continued to admire and to reverence the man who inspired them with his zeal and energy, who criticised their early experiments and results, and who approved their efforts, however feeble and halting at first, if they gave evidence of a desire to attain some truth or to clear up some difficulty. The Foster of this period was a man who rose to all emergencies, keen, shrewd, energetic, genial, kindly, inspiring, loved by his friends and feared by those who counted themselves as his enemies. It was during this period that the foundations of the Cambridge School of Physiology were so well and truly laid, and that such men as W. H. Gaskell, H. Newell Martin, Sheridan Lea, J. N. Langley, J. Reynolds Green, Sidney Vines, the late Frank Balfour, and the late Milnes Marshall were his devoted disciples, to be followed by L. E. Shore, C. S. Sherrington, H. K. Anderson, W. B. Hardy, and a host of younger men who have made Cambridge famous in every physiological laboratory in Europe and America. All were dominated by his personality, stimulated by his intense keenness, restrained by his shrewd and apt criticism—always constructive rather than destructive—and encouraged and helped by his sympathy and advice.

There were many outside the University who for long did not realise the influence that Foster was exerting, and even those in the University who were not in close touch with its developments had little conception of what was being done for science and for medicine within its walls. The day of teaching a medical student how to treat disordered function before he knew anything of the normal structure and functions of the body was rapidly coming to a close, but when Foster appeared on the scene much as had been done to strengthen the scientific training of the student the earlier years of his career were overburdened with clinical work; and although the opportunities for the study of the sciences on which medicine must be founded were being gradually evolved too much of the student's time and energy were taken away from this work. The development of the Cambridge Natural Science Tripos in such a way that an honours degree in that tripos formed an ideal introduction to the practical study of medicine took place just as Foster's work was gaining definite shape, so that those of his pupils who were ultimately to become physicians and surgeons, as well as those who were working in pure biology, could be properly asked to devote their energies to the study and investigation of scientific problems. Chemistry, physics, and general biology, and also the special subjects of anatomy and physiology, could be learned by the medical student with the double object of taking a degree in honours as well as of acquiring a professional education; in this way in the Cambridge school a number of experts were gradually trained, some capable of dealing with physiology on broad biological lines, others who viewed it from the standpoint of the physician, others again who were specially interested in restricted areas of the subject and whose work was intensive rather than extensive. To all these men Foster held out a helping hand, with what results physiologists are well aware. "As one coming into the school just as Foster was leaving it," writes Professor Sims Woodhead to us, "I did not at first realise the wonderful power that he had been in making the Cambridge School of Physiology and Medicine what it is, but as time has gone on and one has had to take part in an organisation, at the building up of which he helped by unweary labour, constant care, and hot enthusiasm, one soon came to realise that his has been not only a unique experience but a unique work. He had the satisfaction of living long enough to know that the great object of his life had been accomplished, for men could say of his work that so well had it been organised and established that it could be carried on without his help. Foster and his immediate colleagues built up one of the greatest schools of physiology in the world, and their pupils have shown themselves to be actuated by the spirit of their masters."

The next most important section of Foster's career was comprised in his official work done at the Royal Society. In 1872 he was elected into that body in recognition of the excellent physiological work which he had done both as teacher and investigator; in 1881 he became in succession to Huxley one of the secretaries. This post he held for 21 years and proved himself to be a wise and strong official. It was so often and so openly said that Sir Michael Foster used his influence in the society in the behalf mainly of physiologists, and in particular of the Cambridge school, that mention may as well be made of the matter at once. Sir Michael Foster was a strong man and a good friend to his friends, but he had the honour of the Royal Society too much at heart to condescend to the persistent practice of favouritism. At the time when his influence was strongest in the Royal Society the development of physiology was the most striking feature in the history of scientific progress. It was inevitable that many of the pupils of so great a teacher should obtain the coveted hall-mark.

In 1900 Sir Michael Foster became Member of Parliament for the University of London, sitting originally as a Liberal Unionist. After a time, however, he took his place on the Liberal side of the House, a proceeding the honesty of which, curiously enough, appeared to arouse much irritation. It had been made perfectly clear that party feelings would never be able to determine his vote, and that he had no desire whatever to speak with authority upon other than scientific subjects. The kind of independent Member of Parliament which he desired to remain would be a most valuable adjunct to the House of Commons, but the presence of such members will always upset the calm of those responsible for the machinery of party politics. At the last election Sir Michael Foster lost his seat by a small number of votes, and the result of the contest was hardly a surprise to any who had seen the effect that had been produced by his inability to support the late Government, particularly in its educational policy. It seems ludicrous that a man of the attainments of Sir Michael Foster should have desired a seat in the House of Commons and not have been able to obtain it. Though by no means an orator, his speeches, which were almost invariably on subjects where he could speak with experience, were always listened to with great interest by the House. He served on several committees and notably was chairman of the Royal Commission on Tuberculosis, the second report of which appeared the day after the announcement of his death; and in all his Parliamentary utterances he showed himself to be a senator who by training and temperament possessed that wisdom and understanding which we weekly, and not over successfully, pray may be the Divine dower of our ruling classes.

The academic honours which fell to Sir Michael Foster's lot were, as might be expected from his long connexion both with the Royal Society and with the University of Cambridge, exceptionally numerous. He received honorary degrees in laws, letters, and science from the Universities of Cambridge, Oxford, Glasgow, Dublin, and McGill; he was a fellow, a corresponding fellow, or an honorary fellow of many foreign learned and scientific societies; and in 1899, the year when he was President of the British Association for the Advancement of Science, he was created a Knight Commander of the Bath. As an author he fully deserved all these distinctions, for, excepting his great predecessor Huxley, no English scientific writer has employed a more classic pen. "The Text-book of Physiology" is a great literary achievement; it is beautifully planned, written throughout in admirable English, and forms a convincing proof that the most elaborately technical subject can be best treated by the scholarly writer. Foster also collaborated with Professor Ray Lankester in editing Huxley's scientific memoirs and with his pupils Balfour and Langley in elementary handbooks on embryology and physiology respectively; while he wrote a life of Claude Bernard and also published in volume form a series of eloquent lectures delivered



SIR MICHAEL FOSTER, K.C.B., M.D. LOND., D.C.L., LL.D., D.SC., F.R.S.
(From a photograph by Messrs. Elliott & Fry.)

at San Francisco (the Cooper College lectures) upon the history of physiology.

Sir Michael Foster was twice married and leaves a son, Dr. Michael Foster, a member of the medical profession.

ERNEST RUDOLPH GOTHARD GROTH, M.D. BERLIN, L.R.C.P. LOND.

WE regret to announce the death of Dr. Groth who was for over 30 years connected with the German Hospital, Dalston, during the last 16 years of which he was the physician in charge of the West-End dispensary associated with that institution. Dr. Groth was born in 1840 and graduated at the University of Berlin, where he subsequently took with honours the degrees of Doctor of Medicine and Master of Surgery. Previously to this he had been attached to the Imperial Court of St. Petersburg. He ultimately settled in London where he conducted a general practice chiefly, though not entirely, amongst the German colony. Dr. Groth evinced an attractive and charming personality, was a warm-hearted friend, and was well known for his many acts of benevolence and generosity. The body was cremated at Golder's Green on Jan. 11th and a number of well-known medical men attended the funeral.

Medical News.

UNIVERSITY OF CAMBRIDGE. — Dr. Donald MacAlister, the President of the General Medical Council and representative of the University on that body, has been appointed Principal of the University of Glasgow, in succession to the late Principal Story.—The appointment to the newly established University Lectureship in Hygiene will be made this term. The stipend is £100 a year. Applications are to be sent to the Vice-Chancellor by Feb. 21st.—Mr. C. Shearer has been nominated to occupy the University Table at the Naples Zoological Station for three months from March 1st.—A memorial service in connexion with the funeral of the late Sir Michael Foster, formerly Professor of Physiology in the University, was held in Trinity College Chapel on Saturday, Feb. 2nd, and was attended by the heads of colleges, professors, and members of the Senate.—A syndicate has been appointed to obtain plans and estimates for a considerable extension of the University chemical laboratory, adjoining the new medical school.—The Graces for the approval of the detailed regulations governing the Mathematical Tripos, by which, among other things, the traditional "order of merit" among the Wranglers is abolished, were adopted by large majorities on Saturday, Feb. 2nd. Over 1400 members of the Senate took part in the voting.—At a congregation on Jan. 31st, the following degrees were conferred:—

M.B. and B.C.—W. H. Newton, Emmanuel.
B.C.—C. H. Rippmann, King's; A. H. Fardon, Christ's; and W. O. Pitt, Emmanuel.

UNIVERSITY OF LIVERPOOL.—At a meeting of the Senate held on Jan. 30th the diploma in public health was awarded to the following:—

W. D. Higson, M.B., Ch.B. Liverp., G. J. Keane, M.D. Liverp.; and R. Owen Morris, M.A., M.D. Edin.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.—This society held its jubilee dinner on Feb. 2nd in the Grand Hall of the Hotel Cecil, London, the President of the society, Mr. E. Lloyd-Williams, being in the chair. After the usual loyal toasts had been duly honoured Mr. Henry Morris, President of the Royal College of Surgeons of England, proposed the toast of "The Odontological Society of Great Britain." He congratulated the company, which numbered over 200, on the great success of the society and referred to the distinguished work of its founders. He said that the scientific and practical work of the society had raised the dental profession to its present enviable and honourable position and had made an indelible and lasting impression on the literature of odontology, at the same time converting the profession of dentistry into a recognised branch of the general profession of surgery. He spoke in sympathetic terms of the likelihood of the society soon becoming merged with other societies and forming one of the sections of the future Royal Academy of Medicine. The President of the society in responding to this toast said that the Royal College of Surgeons of England had been proved to be a good friend to the society in its day of need and had instituted a diploma in 1860 for dentists, thus placing their trembling feet upon the ladder of scientific utility. In its jubilee year the society had been invited to become a section of the Royal Academy of Medicine and that was an honour not to be passed over lightly. Some years ago dentists were a motley crew but the British Dental Association had raised the standard of ethical practice among them. The toast of "Kindred Societies and Visitors" was proposed by Mr. Leonard Matheson and was responded to by Dr. A. Grevers of Amsterdam, Mr. J. Warrington Haward, and Mr. W. Bruce Clarke.

MEDICAL MAGISTRATES.—Dr. Fletcher Little has been appointed a justice of the peace for the county of London.—Mr. William Fleck, M.D., M.Ch. R.U.I., has been appointed a justice of the peace for High Wycombe. Dr. Fleck has been in practice in High Wycombe for 22 years and is a member of the town council and chairman of the hospital and health committee.—Mr. William Wynn Westcott, M.B. Lond., M.R.C.S. Eng., Coroner for North-East London, has been placed upon the commission of the peace for the County of London.

DEATH OF A CENTENARIAN.—The *Times* of Feb. 2nd states that Matthew Fowlds, residing at Fenwick, Ayrshire, died on Jan. 31st in consequence of a fracture of the thigh. He was a hand-loom weaver and engaged in his work up to a few months ago. He was for 84 years a member and for 52 years an elder in the same church and he died in the house in which he was born. The deceased celebrated the 100th anniversary of his birthday in May, 1906, and one of his sons is the Hon. George Fowlds, Minister of Education and Public Health in New Zealand.

DONATIONS AND BEQUESTS.—The late Mrs. A. Field has bequeathed £450 to the Bristol Royal Hospital for Sick Children and Women.—Among the legacies left by the late Mr. William Whiteley are the following: St. Mary's Hospital, Paddington, £2000; the London Fever Hospital, Islington, £1000; Paddington Green Children's Hospital, £500; the Cancer Hospital, £500; Hospital for Consumption, Brompton, £500; Middlesex Hospital, £500; West London Hospital, £500; Chelsea Hospital for Women, £500; National Society for the Prevention of Cruelty to Children, £500; Royal Society for the Prevention of Cruelty to Animals, £500; Royal Hospital, Richmond, £100; and Hayes Cottage Hospital, Middlesex, £100.—The executors of the late Mr. J. L. Toole have given £225 to the Hospital for Epilepsy and Paralysis and Other Diseases of the Nervous System, Maida Vale, W.

SANITARY INSPECTORS' ASSOCIATION. — The annual dinner of this association was held at the Holborn Restaurant on Feb. 2nd under the presidency of Sir James Crichton-Browne. Professor Ray Lankester, replying to the toast of "Science and Art," proposed by Judge Rentoul, referred to the loss which the scientific world had sustained by the death of Sir Michael Foster who on the eve of his death had only just completed the very valuable report which had been issued by the Commission on Tuberculosis. Sir Douglas R. Powell gave the toast of "The Sanitary Inspectors' Association," to which Sir James Crichton-Browne replied, congratulating the association upon the improved and improving prospects for sanitary inspectors. The Select Committee of the House of Commons appointed to deal with the Housing of the Working Classes Amendment Bill, he said, had suggested measures which might be regarded as drastic but which seemed to him to be wise and judicious. These measures involved the transference of the administration of the Public Health and Housing Acts, under which sanitary inspectors operated, from the district to the county councils, and the conferring on the inspectors of security of tenure in the office which they held. The important point was that the Bill which the association had presented from time to time, and which had remained so long dishonoured, was now endorsed by a committee of the House of Commons, and his belief was that it would come to maturity in the form of an Act during the next session of Parliament. There was a growing determination to put an end if possible to infectious diseases. When by sound sanitation bodily resistance to the invasion of disease-causing bacilli had been strengthened, and when by sound education moral resistance to the inroads of vicious

temptations had been reinforced, then would we be on the high road to the millennium. But it was important that we should begin at the beginning and safeguard the infants. One of the most hopeful of the signs of the times was the growing attention bestowed on all domestic and municipal cleanliness. The sanitary inspector was, in his small way, ministering not merely to the material prosperity but to the moral elevation of his fellow-men.

Ottery St. Mary Cottage Hospital.—At the annual meeting of the subscribers to the Ottery St. Mary (Devon) Cottage Hospital held on Jan. 28th under the presidency of Sir J. H. Kennaway, M.P., it was stated that during the past year a new operation room had been provided and that the expense of it had been defrayed by a legacy. A new operating table had been presented to the hospital by Dr. Russell Coombe.

Royal Albert Hospital, Devonport.—At a meeting held on Jan. 31st, under the presidency of Lady Pole-Carew, it was decided to form a committee of ladies for the purpose of obtaining subscriptions and raising funds on behalf of the Royal Albert Hospital. Lady St. Levan was elected president and several subscriptions were received at the meeting.

University of Oxford.—Besides the scholarships in natural science already announced at Keble College, Merton College, and New College, an examination for a scholarship in natural science at Brasenose College is advertised to commence on July 2nd.

Medical Candidates for the London County Council.—In addition to the medical men mentioned on p. 242 of The Lancet of Jan. 26th, we understand that Dr. James Searson will stand as a candidate for West Marylebone.

Epsom College.—A pupil of Epsom College, Mr. S. H. Fazan, has gained an open classical scholarship of £80 at Christ Church, Oxford.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to The Lancet *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

Everard, Arthur George, L.R.C.P.Lond., M.R.C.S., L.S.A., has been appointed Medical Officer to the Barnstaple and North Devon Dispensary.

Higgs, Frederick W., M.B.Lond., M.R.C.P.Lond., has been appointed Assistant Physician to the Belgrave Hospital for Children.

Johnstone, Thomas, M.D.Edin., M.R.C.P., has been appointed Honorary Consulting Physician to the Coronation Hospital, Ilkley.

Lockyer, Cuthbert, M.D., B.S.Lond., F.R.C.S.Eng., M.R.C.P.Lond., has been appointed Obstetric Physician to Out-patients at the Great Northern Central Hospital and Physician to Out-patients at the British Lying-in Hospital.

Martin, H. C., M.B., B.S.Edin., has been appointed Assistant Medical Officer at the Newport Borough Asylum, Caerleon, Mon.

McIlroy, A. Louise, M.D.Glasg., has been appointed Gynæcologist to the Victoria Infirmary, Glasgow.

White, Joseph, M.B., Ch.B.Glasg., has been appointed Clinical Assistant to the Samaritan Free Hospital for Women.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

Alnwick Infirmary.—House Surgeon, unmarried. Salary £120 per annum, with apartments and attendance.

Bangor, Carnarvonshire and Anglesey Infirmary.—House Surgeon. Salary £80 per annum, with board, washing, and lodging.

Barrow-in-Furness, North Lonsdale Hospital.—House Surgeon. Salary £100 per annum, with board and lodging.

Birmingham, Queen's Hospital.—Honorary Physician.

Bolingbroke Hospital, Wandsworth Common, S.W.—Medical Superintendent. Salary £150, with board and residence.

Bradford Poor-law Hospital and Workhouse.—Resident Assistant Medical Officer, unmarried. Salary £100, with rations, apartments, and washing.

Brecon and Radnor Joint Counties Asylum, Talgarth, R.S.O., Breconshire.—Assistant Medical Officer, unmarried. Salary £140, rising to £170 per annum, with apartments, board, washing, and attendance.

Brighton, Sussex County Hospital.—Assistant Pathologist. Salary £80 a year, with board and lodging.

Bristol Royal Infirmary.—Resident Junior House Surgeon and Resident Casualty Officer, both for six months. Salaries at rate of £50 per annum, with board, lodging, and washing.

Calcutta. Corporation of Calcutta.—Health Officer.

Colchester, Essex and Colchester General Hospital.—House Physician. Salary £80 per annum, with board, residence, and washing.

Denbigh, Denbighshire Infirmary.—House Surgeon. Salary £100, with board, residence, and washing.

Glasgow District Asylum, Gartloch.—Resident Assistant Medical Officer. Salary £125, with board and lodging.

Gloucester General Infirmary and Gloucestershire Eye Institution.—Surgeon.

Guy's Hospital.—Surgeon to the Actinotherapeutic Department, Medical Radiographer, and Second Surgical Radiographer. Salary in each case £100 per annum.

Hartshill, Stoke-on-Trent, North Staffordshire Infirmary and Eye Hospital.—Junior House Surgeon. Salary £50 per annum, with board, apartments, and washing.

King Edward VII. Sanatorium, Midhurst, Sussex.—Junior Assistant Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and attendance.

Lewes Dispensary and Infirmary and Victoria Hospital.—Resident Medical Officer. Salary £104 per annum, with apartments, board, and attendance.

Leyton Urban District Council.—Medical Officer of Health. Salary at rate of £475 per annum.

London Lock Hospital.—House Surgeon to the Female Hospital.

Middlesex Hospital, W.—Resident Medical Officer, unmarried. Salary £200, with residence and board.

Orkney, Parish of Rousay and Egilshay.—Resident Medical Officer. Salary £51 per annum.

Robben Island, Cape Colony.—Second Assistant Medical Officer, unmarried. Salary £250 per annum, with quarters and two rations.

Rochdale Infirmary.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

St. Mary's Hospital for Women and Children, Plaistow, E.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, all found.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Assistant House Surgeon. Salary £75 per annum, with residence, board, and washing.

Stafford, Staffordshire General Infirmary.—Assistant House Surgeon for six months. Salary £31, with board, residence, and laundry.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Physician to the Out-patients.

Walsall and District Hospital.—Senior and Junior House Surgeons. Salaries £100 and £50 per annum respectively, with board, residence, and washing.

West Bromwich District Hospital.—Resident Assistant House Surgeon, unmarried. Salary £50 per annum, with board, residence, and washing.

West-End Hospital for Diseases of the Nervous System, Paralysis, and Epilepsy, 73, Welbeck-street, London, W.—Physician to Out-patients.

Westminster General Dispensary.—Honorary Physician.

Wolverhampton and Staffordshire General Hospital.—House Physician. Salary £80 per annum, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS.

Addison.—On Jan. 30th, at Pretty Corner, Northwood, the wife of Christopher Addison, M.D., F.R.C.S., of a daughter.

Hinds.—On Jan. 31st, at Lynton House, Worthing, the wife of Frank Hinds, M.D., of a daughter.

Keyser.—On Jan. 29th, at Butler's Green, Haywards Heath, the wife of Charles R. Keyser, F.R.C.S., of a son.

Matthews.—On Jan. 31st, at Wheathouse-road, Huddersfield, the wife of Craufurd Tait Matthews, M.B., of a son.

MARRIAGES.

Cuffe—Hancock.—On Jan. 31st, at St. Langton's Church, Woodhall Spa, by the Rev. F. Benwell, Major R. Cuffe, V.D., of Woodhall Spa, to Grace Margaret Hancock, eldest daughter of Charles Robert Hancock, Esq., Solicitor, The Uplands, Walmley, near Bristol.

Rees-Dolley.—On Jan. 30th, at Christ Church, Lancaster-gate, David Charles Rees, M.R.C.S., L.R.C.P.Lond., District Surgeon, Port Elizabeth, Cape Colony, to Myrtle May, second daughter of William H. Dolley, of Cuyler House, Uitenhage, Cape Colony.

DEATHS.

Dickson.—On Feb. 2nd, 1907, suddenly, at Wye House, Buxton, aged 64, Francis Kennedy Dickson, F.R.C.P., F.R.C.S.Edin., J.P. of the county of Derbyshire. Friends please accept this, the only intimation.

Gornall.—On Feb. 4th, at Grappenhall, Warrington, John Guest Gornall, M.A., M.B.Cantab., Medical Officer of Health for Warrington, Medical Superintendent of the Fever Hospital, aged 40

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A GREAT ESTATE, ITS AGENT, AND THE MEDICAL PROFESSION.

To the Editors of THE LANCET.

SIRS,—The communications addressed to your manager by the Secretary of the Petworth Park Friendly Society and myself, though not marked private, were not intended for publication, and it seems strange that without the least intimation to either of the writers you should presume to publish them with such undue haste. You condemn the rules of the Society without having seen them and without asking the Secretary to verify the figures given you by an interested individual, which is, in my opinion, most cruel, especially if it be true, as I am informed it is, that the fact of THE LANCET issuing this notice bars all medical men from taking this appointment for fear of being shunned by the medical profession.

You will have learned, if you have condescended to peruse the Society's rules, that the members not only provide for themselves in sickness but also in old age, securing a pension of 8s. per week. Thus at no time could they become chargeable to the rates. Were it not for their thrift they would probably have the parish doctor in sickness and the workhouse in old age.

I have had a careful calculation made of how the remuneration according to the rules works out, and I find that instead of being under 3s. per head, as stated by you, it is just over 4s. per head. Out of 118 members which the Society consisted of in 1906, 88 resided within a radius of two miles of Petworth Town; 31 of these are in the town, 24 are within one mile, and 33 within two miles. Of the remaining 30 members, 14 are within a radius of three miles and only two above six miles from the town. The number of men women and children within three miles is 287, the remaining 47 are beyond three miles, 22 of them being within four miles. The medical officer resides in Petworth. The wish expressed by you that Lord Leconfield should grasp your *ex parte* statement will, I fear, not be gratified when these facts are presented to him and the society may be perchance enabled to tide over their difficulty, notwithstanding your inability to assist them.

The remuneration which you mention in the last sentences of your comments may or may not be adequate, but the following facts remain. 1st. The present medical officer was most anxious to obtain the appointment and has admitted to the Committee that the post has been most useful to him. 2nd. It was, I believe, taken into consideration as an asset of the practice which he purchased. 3rd. The Society during its 56 years of existence has only had four medical officers. The first held the appointment for 24 years, the second for 26 years, the third for one year, and the present man for five years. These men succeeded one another as the practice came into the market. 4th. In June, 1900, on the death of the then medical officer, one of the doctors practising in the town who now declines the post was most anxious to obtain it.

I wish to point out this is no personal matter, but that I am pleading on behalf of the members of a Friendly Society anxious to make known their wants through the ordinary channels of the medical profession and I must again state that if they are denied this they must take such steps as they think necessary to make those wants known. In justice to the Society I ask you to be good enough to give this letter the same publicity as you last week gave my private communication.

Yours faithfully,

Estate Office, Petworth, Jan. 29th, 1907. HERBERT E. WATSON.

To the Editors of THE LANCET.

SIRS,—At a meeting of the committee of the Petworth Park Friendly Society held on Monday last my estimate of the number of men, women, and children in the club was said to be inaccurate. In December last I applied to the secretary for the exact numbers and he was unable to give them to me; I asked him whether he thought it would be correct if I allowed three children to a family and he replied that certainly would not be an over estimate and I accordingly made my calculation on that basis, believing it to be for an agricultural community an under estimate. I presented these figures to the committee on Dec. 14th, 1906, and they were not challenged then or since until the meeting of Monday, last, Jan. 28th. The figures as presented by the secretary now seem to me to be extraordinary allowing as they do only 1·4 children to a family, but I am prevented from verifying them as I cannot get the returns or even the list of members of the club from the secretary at present, as he says he must put it before the committee first. I have written to protest against this. The statement that the average remuneration of the club for the last ten years is £75 is misleading. The average for the last five years is £69 and for the last three years £67 10*s*. My last half year's salary was £30 1*s*. 7*d*.

I am, Sirs, yours faithfully,

Jan. 30th, 1907. A. H. SPICER.

*** We have also received a long letter marked "private and confidential and not for publication" from Mr. H. E. Watson inclosing a statement by the secretary of the Petworth Park Friendly Society. The figures would have been interesting and we do not understand why we are prevented from publishing them. The tenour of Mr. Watson's private communication may be gathered from one small quotation: "Unless you are prepared to make a private and public apology to the society and Lord Leconfield as I have suggested and to insert the advertisement which the secretary sent you in your paper without any qualification I shall send the whole episode to the local press." We are not prepared to follow Mr. Watson's amiable suggestion ("suggestion" is a good word for an intimation that disobedience will be followed by public exposure), and we hear with equanimity that our inability to manage our advertisement columns to his liking will lead to our denunciation in the local press.—ED. L.

AN APPEAL.

THE Church Army makes a strong appeal for help in the following sad case:—The widow of a physician (M.R.C.P., M.R.C.S.), formerly in excellent practice in the West-End of London, finds herself in her old age reduced to less than bare necessaries. All she has to depend upon is an annuity of £20 a year from a medical charity (which is sufficient to pay her rent), and 5*s*. a week given by her children, which is all they can possibly afford. The husband was compelled to relinquish his practice in consequence of a long and painful illness; unfortunate speculations completed his ruin, and he was unable to provide for his widow and family. The poor old lady, who is 81 years of age, is crippled with rheumatism in both knees and is only able to crawl about a very little. Her sight is very bad and she is entirely unfit to do any sort of work. It is desired to raise a small fund out of which an allowance can be made to supplement her income. Communications should be addressed to Mr. Colin F. Campbell, honorary social secretary of the Church Army, 55, Bryanston-street, W., who will gladly answer all inquiries.

THE EVANS VACUUM CAP COMPANY, LIMITED.

WE have been asked by this company to insert an advertisement of what it terms its "remarkable invention for the culture of hair," the request being accompanied by the following letter:—

> DEAR SIR,—We should be obliged if you will inform us your lowest charges for the insertion, next to reading matter, of the enclosed advertisement in your publications once a week for a period of one year, we to provide you with a block. A notice to be written by you on the advantages of the Cap to appear once every three months, we to be at liberty to vary the advertisement once every three months. A copy of your publications with advertisement to be sent to us each week.
>
> Yours faithfully,
>
> THE EVANS VACUUM CAP CO., LTD.
> (J. R. HANBURY, Manager.)

P.S.—We will furnish you with the material necessary for the notice above referred to.

We think that the Evans Vacuum Cap Company, Limited, can hardly have expected that its apparatus would be advertised in a medical paper, and we need hardly say that its suggestion to enter upon business relations with THE LANCET has received no reply from us. But we ask our readers to note the conditions upon which it was proposed that the advertisements should be inserted. Every three months the company was to be at liberty to impose upon the editors an article setting out the advantages of the apparatus. We must suppose that there are lay papers which lend themselves to such a degrading method of increasing their revenue. It has, of course, long been clear to all who know anything about newspaper production that many of the veiled advertisements, which appear in editorial or semi-editorial shape in those newspapers which draw a large proportion of their pecuniary support from quacks, owe their publication to the pressure of the advertisers, but we will admit that we had no idea that the proprietor of a quack apparatus was so sure of his position that he could deliberately attempt to make the following bargain:—that in return for his cheque the editor should every three months assist him to foist his wares upon the public by the publication of an imitation editorial article.

THE CALLING IN OF MEDICAL MEN TO TREAT WORKMEN.

AT Sunderland recently Dr. J. Cunningham sued Messrs. Greenwell and Co., ship repairers, for one guinea for attendance upon one of their men who had had a fit when at work. The medical man was summoned by a foreman and helped to remove the workman on a stretcher from the ship's hold to a cab. Judge O'Connor refused to hold that this constituted professional attendance, saying that it was what was done by "nurses, policemen, and ordinary pedestrians." It is not easy to follow a line of reasoning which might have as its result the leaving of injured workmen to the ministrations of nurses, policemen, and ordinary pedestrians on occasions when the summoning of a medical man is imperative. The test must be the object for which the person is called in and whether he is merely asked to help as an ordinary bystander might be in a street accident. The foreman, however, in a ship repairers' yard would hardly summon a "policeman or ordinary pedestrian" who could do no more than the other men at his command. If he called in a nurse because he regarded her as an expert in handling and moving sick and injured persons she would surely be entitled either to give her assistance voluntarily if she desired to do so, or to ask for payment. In a like case the medical man, although he may not delay in order to haggle for a fee first, is entitled to be paid for what he does when he is summoned in his professional capacity.

A QUESTION OF PROFESSIONAL PROCEDURE.

To the Editors of THE LANCET.

SIRS,—On Jan. 20th a motor omnibus belonging to the London General Omnibus Company plunged into the river at Barnes. There were only two passengers, both of whom came to me the next morning and I examined their injuries and wrote certificates for them to send to the omnibus company. To-day, Feb 5th, the medical adviser of the London General Omnibus Company called on one of my patients and examined him. No communication of any kind has been made to me either by the medical officer or the omnibus company. I have always understood that in such a case it was incumbent on the defendant's medical adviser to ask the permission of the practitioner in attendance before seeing or examining patients.

I am, Sirs, yours faithfully,

Vincent-square, S.W., Feb. 5th, 1907. LAUNCELOT ARCHER.

*** Our correspondent should have been advised of the intended visit.—ED. L.

Storatin.—In the "Extra Pharmacopœia of Martindale and Westcott" (twelfth edition, 1906, p. 287) it is stated that "solutions ½ to 1 per cent., rendered sterile by boiling, are used and are said to be equal to cocaine solutions double the strength. Intraspinal anæsthesia is produced by from 0·02 to 0·1 gramme." For further particulars see the following works:—1. Formulaire des Médicaments Nouveaux, Bocquillon-Limousin, seventeenth edition, 1905; eighteenth edition, 1906; Paris. 2. Pharmaceutical Journal, vol. ii., 1904, p. 86. Many details of its use are given in THE LANCET of Jan 27th, 1906, p. 227, by Mr. G. L. Chiene of Edinburgh. Other paragraphs and bibliographical references will be found in THE LANCET of Feb. 17th, p. 482; Oct. 20th, p. 1102; Oct. 27th, p. 1161; and Dec. 29th, p. 1802 (Annus Medicus). A death after the intraspinal injection of 0·06 gramme for the performance of an operation for fractured patella is recorded in THE LANCET of Jan. 5th, 1907, p. 45.

R. H.—We do not think that instruction of any practical value could be given by correspondence.

M.B., L.R.C.S. Edin., is thanked for his letter and inclosure.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.), St. Mark's (2.30 P.M.).

TUESDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (13th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

THURSDAY (14th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.), Tottenham (Gynæcological, 2.30 P.M.).

FRIDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.).

SATURDAY (16th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (11th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M.: Clinical Evening. Cases will be exhibited by Dr. O. K. Williamson, Dr. T. D. Savill, Dr. J. Collier, Dr. C. Wall, Dr. G. Little, Dr. L. Guthrie, Dr. F. J. Poynton, Dr. P. Weber, Mr. L. B. Rawling, Mr. A. E. Barker, and Mr. C. A. R. Nitch. Patients will be in attendance at 8 P.M.

TUESDAY (12th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M.: Papers:—Mr. J. D. Malcolm: On the Condition of the Blood-vessels during Shock.—Mr. R. M. Corner: Fractures of the Odontoid Process of the Axis. Epidiascope demonstration.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (17, Bloomsbury-square, W.C.).—8 P.M.: The Curator will show the "Anti-opium Plant" (Combretum Sundaicum Miq.) and Recent Additions to the Museum will be exhibited. Papers:—Mr. R. H. Farr and Mr. R. Wright: Note on the Official Process for the Determination of Morphine in Opium and Tincture of Opium.—Mr. T. Tickle: The Estimation of Morphine, a Method of Extraction.

MEDICO-LEGAL SOCIETY (22, Albemarle-street, W.).—8.30 P.M.: Exhibition of Medico-Legal Specimens. Discussion on Suicide and Sanity (opened by Dr. C. Shaw).

WEDNESDAY (13th).—HUNTERIAN SOCIETY (London Institution Finsbury-circus, E.C.).—8.30 P.M.: Paper:—Dr. Langdon Brown: Acetonuria, its Clinical Significance and Treatment.

DERMATOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—5.15 P.M.: Meeting.

UNIVERSITY COLLEGE (LONDON) MEDICAL SOCIETY (Medical Library, University College, Gower-street, W.C.).—8.30 P.M.: Paper:—Dr. H. Head: The Grouping of Sensory Impulses.

THURSDAY (14th).—HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road, W.).—8.30 P.M.: Papers:—Mr. R. Johnson: A Case of Fatal Extravasation of Urine from the Ureter from Ulceration of a Minute Calculus.—Dr. T. B. Hyslop: Psychorhythm and Recurrent Psychoses.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8 P.M.: Clinical Meeting. Mr. L. Cooper: Paralysis of the Vertical Movements of the Eyeball.—Mr. A. S. Morton: Case of Sclerosis of the Eyeball.—Mr. M. L. Hepburn: A Case of Polychoria associated with Chronic Glaucoma.—Mr. W. Tay: A Case of Tuberculosis Diagnosed from the Ophthalmoscopic Appearance of the Fundus.

BRITISH GYNÆCOLOGICAL SOCIETY (20, Hanover-square, W.).—8 P.M.: Introductory Address: The President (Mr. W. D. Spanton). Paper:—Dr. J. Oliver: A Study of Suppuration of the Ovary, with illustrative cases.

FRIDAY (15th).—SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, Cavendish-square, W.).—5 P.M.: Clinical Evening for the Exhibition of Cases followed by Discussion. Patients in attendance from 4.30 P.M.

EPIDEMIOLOGICAL SOCIETY (11, Chandos-street, Cavendish-square, W.).—8.30 P.M.: Paper:—Colonel D. Bruce, C.B.: Recent Researches into the Epidemiology of Malta Fever.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (11th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. J. M. H. MacLeod: Clinique. (Skin.) 5.15 P.M.: Lecture:—Dr. J. H. Squire: Opsonins in Relation to the Specific Treatment of Tuberculosis.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon: Pathological Demonstration:—Dr. G. C. Low. 2 P.M.: Medical and Surgical Clinics. Dr. Bail: Operations. X Rays. Mr. Dunn: Diseases of the Eye. 5 P.M.: Clinical Lecture:—Dr. Russell.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. B. Evans). 2.30 P.M.: Cliniques: Medical Out-patient (Dr. Whipham), Throat, Nose, and Ear (Mr. Carson); X Ray Demonstration (Dr. Pirie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. StClair Thomson: Diseases of the Throat, Nose, and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

TUESDAY (12th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. W. Ewart: Clinique. (Medical.) 5.15 P.M.: Lecture:—Dr. Robert Jones: The Relation of Epilepsy to Insanity.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Moullin: Gynæcological Operations. 2 P.M.: Medical and Surgical Clinics. Dr. Bail: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. Low: Bilharzial Disease.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—10 30 A.M.: Clinique:—Medical Out-patient (Dr. Auld). 2 30 P.M.: Surgical Operations (Mr. Carson); Cliniques: Gynæcological Out-patient (Dr. Giles), Surgical Out-patient (Mr. Edmunds). 4.30 P.M.: Lecture-Demonstration:—Mr. A. de Prenderville: The Administration of Anæsthetics.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 3.15 P.M.: Special Lecture:—Mr. M. Morris: Eczema.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. Ormerod: Hysteria.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Mr. Wallis (Surgical). (Post-Graduate Course.)

WEDNESDAY (13th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. H. L. Barnard: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. G. H. Savage: Unsoundness of Mind not always Insanity.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays. Dr. Robinson: Diseases of Women. 5 P.M.: Dr. Beddard: Practical Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Cliniques:—Dermatological (Dr. Meachen), Ophthalmological (Mr. Brooks), Medical Out-patient (Dr. Whipham).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Wells: Medicine. 3.30 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Dr. J. Atkinson: External Ear.

UNIVERSITY COLLEGE HOSPITAL (Gower-street, W.C.).—3 P.M.: Clinical Lecture:—Dr. Blacker: Heart Disease Complicating Pregnancy and Labour.

THURSDAY (14th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Mr. M. Morris: The Treatment of Some Common Skin Affections.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays. Mr. Dunn: Diseases of the Eye. 5 P.M.: Lecture:—Mr. Keetley: Malunited Fractures and Unreduced Dislocations of the Elbow.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Gynæcological Operations (Dr. Giles). Cliniques:—Medical (Dr. Whiting), Surgical Out-patient (Mr. Carson). 3 P.M.: Clinique:—Medical In-patient (Dr. Chappel). 4.30 P.M.: Lecture:—Dr. Whiting: Acroparæsthesia (with cases).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Dr. H. Cooper: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M.: Chesterfield Lecture:—Dr. M. Dockrell: The Relation between Cicatrix, Keloid, Scleroderma, and the Treatment of each.

CHARING CROSS HOSPITAL.—4 P.M.: Dr. Mercier: Demonstration (Mental). (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M.: Lecture:—Mr. James: Some Points of Importance in the Treatment of Dental Conditions in Children.

SOCIETY OF ARTS (John-street, Adelphi, W.C.).—4.30 P.M.: Sir Frederic S. P. Lely, K.C.I.E., C.S.I.: The Practical Side of Famine in India.

FRIDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. A. Lawson: Clinique. (Eye.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Moullin: Gynæcological Operations. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Mr. R. Lloyd: Anæsthetics.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld), Ophthalmological (Mr. Brooks). 3 P.M.: Clinique:—Medical In-patient (Dr. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Mr. Ballance: Surgery of the Nervous System.

SATURDAY (16th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich.)—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

EDITORIAL NOTICES.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1906, which was completed with the issue of Dec. 29th, were given in THE LANCET of Jan. 5th, 1907.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1906 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Feb. 7th, 1907.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb.	1	30·330	N.	...	59	38	32	32	33	Fine
,,	2	30·520	E.	...	45	37	30	31	32	Cloudy
,,	3	30·340	N.E.	...	38	34	31	...	31	Overcast
,,	4	30·190	N.E.	...	38	36	31	32	34	Overcast
,,	5	30·320	N.E.	0·04	42	38	34	36	36	Overcast
,,	6	30·272	E.	0·01	72	41	35	36	36	Cloudy
,,	7	29·940	S.	...	67	37	31	30	32	Fine

During the week marked copies of the following newspapers have been received:—*The Northern Scot and Moray and Nairn Express, Western Morning News, Yorkshire Post, Standard, Daily Chronicle, Morning Leader, Daily News, Daily Telegraph, Manchester City News, Derbyshire Courier, Westminster Gazette, Wimbledon Boro' News, Oldham Chronicle, Farm and Home, &c.*

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